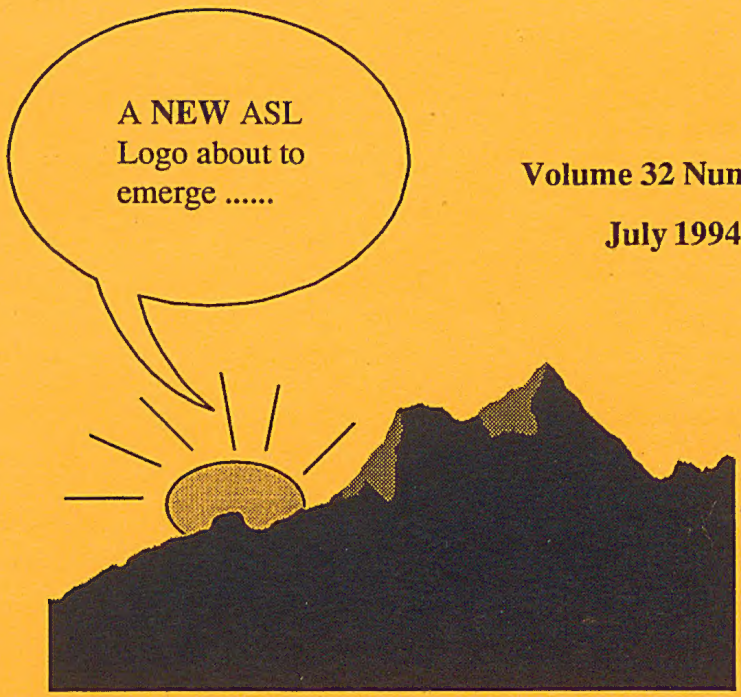
AUSTRALIAN SOCIETY FOR LIMNOLOGY INC.

NEWSLETTER



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MEMBERSHIP DETAILS

The Australian Society for Limnology Inc. (ASL) is an association of over 500 people with professional or amateur interests related to Australian inland waters. Since its inception in 1961, the society has played an important role in fostering limnology in this country. The ASL promotes liaison between limnologists in academic, government and private institutions and has a vested interest in the conservation of aquatic and related resources. Annual conferences are held near centres of limnological interest, and the programme includes scientific sessions, filed excursions and social activities.

The ASL regularly produces a newsletter with notes on limnological activities, articles of interest, book reviews and announcements of upcoming events likely to be of interest to Members.

Membership applications are welcome from any person with an interest in limnology. Five classes of membership are available:

Ordinary members	$ 30.00
Student members	$ 15.00
Life members	$ 250.00
Institutional members	$ 35.00
Sustaining members	Fee on application

Membership covers the period from 1 July to 30 June and all members receive the regular and occasional publications produced by the society. Members may also choose to receive the Australian Journal of Marine and Freshwater Research, the Australian Journal of Zoology and/or the Australian Journal of Botany at special reduced rates. The subscription of each journal is based don the calender year in which the subscription is paid.

Enquires relating to membership should be directed to the Membership Officer:

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Material for publication in the October 1994 Issue of the Newsletter should be sent to the editor (see back pages) **before 20th September 1994**.

Long articles should be forwarded as unformatted text, preferably in IBM-compatible discs or via the editors email address. Beware coded emails as we have limited access to decoders. Formatted text may be sent from any commonly used word processing package (eg. Word or Wordperfect) - on a floppy disc.

Cover: - same space next issue - new Logo....

EDITORIAL

Welcome to this bumper edition of the ASL Newsletter. The creation of this issue has been relative hassle-free - compared to the first two issues the new group of "editors extraordinairre" attempted to piece together. An initial attempt at issue number one (Vol 31(3)) ended up in the toilet on a slippery 1.44Mb 3.5" Disk (*accidently - of course*). The second issue (Vol 32(2))seems a vague haze where many emails went missing - as one of the editors (the one that seems to do all the typing!) was suffering post thesis submission trauma. Enough of the past - we now have a sleek and highly efficient system in place - no disks are to be taken to the toilet and no more theses will be submitted.

As for ASL Newsletter Volume 32(2) it is jam-packed-full of scuttlebut and prattle, useful comments and announcements and the much waited FASTS Policy Document. We decided to publish the policy document so all members of ASL have a chance to comment directly to FASTS on the outlined positions and strategies. We urge all members to take the time and comment - as this is your chance to be an active member of FASTS (part of your ASL membership fee pays the ASL membership of FASTS). If apathy overtakes you, and direct comment fails, we urge you to send comments to your State Executive - who will raise them at the next Executive meeting and perhaps they will form part of an official ASL response.

A new addition to this issue of the newsletter is "From The President" - a personal chat from the top. This is an ideal way in which the president can raise and comment on a range of issues. You can support your president by replying in writing (Letters to the Editor or separate articles) about how you feel on the issues raised. The president is trying to convey the ASL 'mood' at a number of forums and can't do it in a vacuum!!!

A word of warning; "Postcards from the Sedge" will get more Mills and Boon writings unless another member offers to put ASL out of its misery and contribute a postcard of their own. Perhaps a member from **Western Australia** or **Tasmania** would like to contribute to the next issue??????

We noted with interest that no-one in ASL attended a conference between March and July (Conference Reports Section) or had any papers published (Bibliography). As you relax on the plane (or train) with that post-conference aura hanging above you put pen to paper and send in the conference happenings. Place a reprint in the post to Russ Sheil and keep the Bibliography alive.

FROM THE PRESIDENT

"Limnology is the study of inland waters" - so our new ASL letterhead paper tells us as a footnote. As I think of all the things that limnologists do, and the diversity of limnologists we have as society members, it is obvious that the approach to our science is more than scientific study. We have always had to be aware that water is important to all of life, not just the aquatic bits of life. Hence, we live with conflicts of interest, as human demands on land and water dictate how we manage inland waters. The way we think about water issues is influenced by our abilities to form links between science and management. The nature of the problems we tackle gives us "on the job" training in integrating the multitude of factors relevant to any issue - probably more so than in other disciplines. So we should be capable of reacting to the needs of inland waters from both scientific and management viewpoints. Indeed we are well placed to be proactive in leading, and directing, the needs of our discipline within the human society we are part of. But are we doing this?

Biodiversity, long term monitoring, taxonomy, wetland loss and endangered ecological communities are just some of the issues that have come my way in the first half of 1994. I'm sure you have had others. Opportunities to become involved in leading - or following - these and other issues related to inland waters are available. We can create other opportunities if we want to.

My questions to members in this newsletter are:
DO YOU HAVE AN ACTIVE OR PASSIVE ATTITUDE TO YOUR ROLE AS A LIMNOLOGIST?
WOULD YOU WANT TO CHANGE THIS?

What roles, what issues, what actions should we be taking as individuals, and as members of ASL? In which arenas should we share our experience and opinions: science, management, government, politics.....?

Margaret Brock

PRATTLEBUTT, SCUMOUR AND RUTTLE

NEW SOUTH WALES

Environment Management Unit, Water Board

From: Jay Stricker

Colin Heath and Jacqui Low are preparing an algal toxin database in conjunction with the NSW Dept of Water Resources, through the State Algal Coordinating Committee (SACC).

In early May a helicopter gunship was brought in to battle the aliens in Botany Wetlands!! Jay Stricker was one of a small army of observers around the Botany Wetlands to watch the application of glyphosate to trial plots of the noxious weed Primrose Willow, (*Ludwigia peruviana* - Onagraceae) by a specially modified helicopter. The spraying was supervised by Geoff Sainty and Geoff McCorkelle of CSIRO Division of Water Resources, who are monitoring the effect on the Primrose Willow and any residues in the pond water. The efficacy of the trial won't be unknown until the plants try to grow again next spring.

Charles Sturt University - Wagga Wagga

From: Lorraine Hardwick

Things are moving quietly along at Wagga Wagga. The undergraduates have recently returned from a successful field trip to Sunny Corner, sampling water and bugs. What would we do without old mine sites! Pat Murray is soldiering on with her hydropsychids, attempting to determine the feasibility of predictive modelling in her streams. She found that streams coming from northern subcatchments of the Murrumbidgee river are distinctive in both their chemistry and trichopteran communities from the Murrumbidgee River and streams in southern subcatchments of the Murrumbidgee River. Lorraine Hardwick continues to ponder the pattern/lack of pattern in macroinvertebrate assemblages in riparian microhabitats, with only the walkman and some good blues for company. Preliminary survey results found small patterns in community distributions, particularly in *Eleocharis sphacelata* beds, but generalism rules OK! Michael Healey is our resident frog person, but hasn't the time with work and study to do anything else. David Simon is wondering when to stop experimenting with Chlopyrifos and microcosms and when to start writing up. He's open to all suggestions. And he's also wondering how to get work investigating elephant/toxicology relationships somewhere near Adelaide. David Robertson is occupied. He's chairing a forum on Carp Management in late June at the University. We are shortly (September) to gain a Professor in Environmental Studies, so expect great things!

Water Research Laboratory
University of Western Sydney - Hawkesbury

From: Peter Adcock and Greg Ryan

We would like to introduce the research team based at Richmond. The majority of our research is on the treatment of stormwater and tertiary treated sewage effluent by constructed wetlands. We are currently studying wetlands at Byron Bay and Katoomba and have recently developed an experimental site at Richmond. The team is headed by Associate Professor John Bavor and Dr Paddy Osborne. We are currently affiliated with the CRC project 2.1 on constructed wetlands. Our research team is made up of the following people.

Dr K Sakadevan is our resident soil chemist assessing phosphorus adsorbtion to wetland soils and various gravels (and is a very active field worker).

Dr David Roser an environmental microbiologist come computer analyst #!?, is currently developing a program which will act as an interactive software aid to wetland design (the modelling of modelling wetlands).

Dr Alan Heritage who recently joined us from the CSIRO Division of Water Resources is our resident interior decorator, currently working on the development of a high rate vertical flow wetland, and disinfection within wetlands.

Peter Adcock, effluent stirrer extrodinare, who occasionally tries to pass himself as a botanist, is currently undertaking a PhD in plant growth (he's very good with a ruler!!)

Greg Ryan, an environmental microbiologist, who washes daily in MilliQ water, is also enrolled in a PhD researching the role of bacteria in phosphorus cycling in wetlands.

Domenic Riitano has just started his masters calculating a phosphorus budget for the Carcoar wetland at Blayney.

Maha Mustafa, is finishing off her PhD looking at the rate of P and N uptake by *Azolla spp.* (Always invite to a party for her Egyptian cooking.)

And last but not least are two field assistants Jamie Starrett and Kevin Williams, and our secretary Bronwyn Davies. If you are still reading at this stage we apologise for its lengthiness, in the future we will keep it short and full of interesting findings, perhaps.

Environmental Studies Unit (ESU) - New South Wales Department of Water Resources

From: Andrew Brooks

The Aquatic Ecosystem Monitoring Group continues to be busy thanks to our fearless leader, Mick Bales, who has been applying for numerous new projects and actually getting some! He has perfected the technique of converting one small sentence in a funding proposal into six months of hard work.

Meredith Royal has stopped the field sampling for a few months on her Central and North West Water Quality, Border Rivers biomonitoring and Pindari dam enlargement projects. This will give Mere time to organise the macro-invertebrate data and re-aquaint herself with the office before going out again in September. Monika Muschal presented a poster on biomanipulation at the conference at Rottnest Island. Monika has been carrying out research on this work, funded by LWRRDC, within farms around Cowra, and is taking a break from her monthly sampling to work out what the results mean.

At the time of writing, the majority of the rest of the group (Jennie Fulton, Juli Boddy, Doug Westhorpe, Renaye Skaines and Michael Moroney) are sampling macroinvertebrates and macrophytes for the National Resources Audit Council in the north-east of NSW. Jennie has recovered successfully from organising the project, though she still has that twitch when the words "site selection" are mentioned. At last report, they were getting through the sampling sites OK and still talking to each other.

Andrew Brooks and Doug are currently carrying out a subcatchment project funded by LWRRDC. This involves macroinvertebrate sampling and water and sediment pesticide analysis upstream and downstream of a cotton farm on the Mehi River. Andrew is half way through his Masters (supposedly!) investigating the macroinvertebrate communities within a cotton farm and their relationship with pesticide concentrations in the water and sediment.

In other news from around the Environmental Studies Unit, Sonya Ardill has finalised 1992/93 work on the Lower Darling River environmental flow requirements and has begun work on stage 1 of Impact Assessment of Increased Flows in the Lower Snowy River. Sonya has also been carrying out a workshop titled "Disco Dancing to the 1970's greatest hits", which is held on Saturday nights at her place. Tim "Club Paradise" Cooney has finalised the North West Plan Wetland Inundation Flow Requirements and has been looking at unregulated flows and instream requirements for the purpose of assessing licence applications. Both Tim and Sonya have also been working on the State Fish Passage Program. Greg White's group continue in their endeavours to cover the state in constructed wetland and other nutrient control works. New arrivals in the Environmental Studies Unit include Jan Shaw, who escaped from Victoria, and Peter Mackay. Welcome to Parramatta!

AWT-EnSight - Stream Studies section.

From: Pete Swanson

'Twas the week before the end,
of the year (financial)
Reports will soon be finished
And the celebrations substantial.

In the corner, wrestling ensues,
as Bruce Chessman fights the budget.
Julie Currey fits diurnal trends
If the line don't fit she'll fudge't.

Ivor Growns has joined the team
groans for !Growns![1] - we now have two.
For Blue Mountains fishy data
Monte-carlo biscuit stats might do.

BELUMBULA - MINE WASTE SPILL!
Get P.M.[2]! and and that boy Hardwick!
There was no fish
There was no gold
But Geeez, the lads were quick.

You become what you I.D., they say
Hugh Jones can flex a mussell
Dave Holleley squashes chironomids'
eads!
- thats far from a fair tussle.

Ruth O'Connor's eyes are square
from peering at the screen
Coxs River bugs and mud,
in Ruth's nightmares sometimes seen[3].

Simon Williams has counted bugs
from Hawkesbury/Nepean sites
So come on, give us a SIGNAL, Will

..Uhh...Not that sort of signal.....[4]

Rapid assessment assessment
is Dave Ross' new pursuit
Tracey McVea has been Pict-on
- she too is a new recruit[5]

Di Flett and Mike Mannile
Have taken sampling to new heights
Pollutant loads of dam inflows
are in their eagle-eyed sights

and Amanda[6] creates a database
for creatures great and small.
You can be included too,
once pickled in alcohol.

Explanatory notes.

[1]Jane Growns is working with Bruce on the effects of agriculture on invertebrate communities in the Williams River.

[2]In a lightning study, Paul McEvoy and Rod Hardwick used invertebrates to try to identify the impact of a mine waste spillage at the Belumbula River but found it difficult to distinguish between acute and chronic mining and other impacts.

[3]Ruth is now reporting a sediment (metals and trace organics) and macroinvertebrate survey of the Coxs River.

[4]SIGNAL is an index for stream health developed in Stream Studies.

[5]Tracey is identifying invertebrates collected from the Picton area as part of the EIS studies for sewage treatment options.

[6]Amanda is Amanda Kotlash.

The Murray-Darling Freshwater Research Centre

From : Rhonda Sinclair

Jackie Dickson (nee Griggs, Hons 1993 University of Tasmania, Department of Zoology) has joined the Z-team (zooplankton) at MDFRC on an ABRS grant to work on cladoceran taxonomy and ecology. The project is specifically aimed at sorting out the confusion in the Chydoridae and follows on from the work of the late Prof. D. G. Frey, who worked at MDFRC in 1986.

Terry Hillman spoke on *Environmental Limitations* at a Murray-Darling Association workshop on "River Management - Constraints and Limitations" on board the M V Kookaburra on 13 May. The aim of the one-day workshop was to improve the understanding of the various constraints that limit the management of the river systems of the Murray-Darling Basin.

The River Basin Management Society Inc. and the Cooperative Research Centres for Catchment Hydrology and Freshwater Ecology convened a two day conference on *Waterways & Catchments: Research and its Application* held at the Albury Convention Centre on 23 and 24 May. CRCFE speakers were Richard Marchant (*Some recent advances in the biological assessment of Victorian Rivers*), Peter Cullen (*The rationale for environmental flows*), Terry Hillman (*Floodplain and riparian processes*), Barry Hart (*Water quality monitoring for ecological management- are we getting value for the investment?*) and Graham Harris (*Eutrophication of rivers and storages - should we use Vollenweider's models??*).

A two-day Search Conference was held at MDFRC on 7 and 8 June, to explore the possibility of the primary sorting of invertebrate samples with workers with mild intellectual disabilities. As most of you would be aware, the primary sorting and processing of field samples is often the limiting factor in survey based scientific work; and although a degree of scientific knowledge is required, it is often viewed as tedious by professional staff; and it is difficult for government departments to employ staff on a casual basis to carry out this work. Informal surveys at a taxonomy workshop at MDFRC and at a Biodiversity Conference at Macquarie University in 1993, indicated a readiness to use a primary sorting service were one to be available.

The two-day Conference was held to ascertain the feasibility of the proposed exercise, and a case for continued funding will be based on the outcome of this Conference.

The specific subjects explored during the Search Conference were:

- the teaching/learning processes involved,
- goals and means of developing work and social skills amongst workers,
- research objectives,
- social objectives (local and wider),
- structure of the task of primary sorting,
- requirements for quality assurance and means of satisfying them,
- sources and means of external support, and

- economic future (can a self-sustaining business be established?) and market development.

The outcome of the Conference was that external funds are now being sought to conduct a Feasibility Study.

On the 2 and 3 June, David Mitchell, Judy Frankenberg and Greg Raisin were invited to attend a workshop at the Shortland Wetlands Centre in Newcastle being run by the NSW Department of Water Resources on the *Practical Aspects of Constructed Wetlands: Plant Establishment*. The primary focus of the workshop was to explore the design, implementation and operation of wetlands for the establishment of aquatic plants. A primary objective of the NSW DWR resulting from this workshop was to come up with a conceptual design for each type of wetland upon which detailed design and implementation will be based. The workshop brought together people from many disciplines (engineers, planners, managers, hydrologists, botanists, chemists etc.) who shared different perspectives and insights into the practical aspects of constructing and using wetlands.

The CRCFE will be holding a Search Conference from 2 - 4 September at Mildura on board the paddleboat, *Coonawarra*, to examine the research needs and opportunities in large lowland rivers, like the Lower Murray and Darling. Attendance will be by invitation and it is envisaged that about 25 people will attend, roughly 2/3 researchers and 1/3 managers. The output of the Conference will be a report which establishes a research agenda to guide the CRCFE and other interested parties, in formulating specific research projects for these lowland rivers.

Newcastle University
Department of Geography

From: Dr Brian Timms

Brian Timms, in his semi-retirement, has moved in and is converting at least the physical geographers to wetter matters. He is continuing his studies on saline lakes in the Paroo in both western NSW and over the border into southwest Qld. After initial work on their biology he is now concentrating on the hydrology and sedimentation of the lakes. Many of the lakes are filling in rapidly as an indirect result of overgrazing, so Brian is mapping old and new surfaces of lakes, sediment sources, and rates of infilling. When it gets too hot out west for work, then he goes to the Monaro (for you non-geographers this is the uplands of se NSW where the water is solid in winter) where work on the 256 lakes (well, depressions which sometimes hold water) is proceeding slowly. Brian reckons temporary lakes, whether salinas out west or freshwater lagoons and playas elsewhere are the real essence of Australian Limnology, but it takes ages to get data on them because of their ephemerality.

AUSTRALIAN CAPITAL TERRITORY

From: Michele Barson

Following the successful joint ASL/Ecological Society meeting on lobbying held last December (see report elsewhere in the Newsletter), ACT limnos and ecologists will join members of the Australian Water and Wastewater Association for a talk on DEST's National River Health Program at the Academy of Science on 21 July. If you are Canberra based and didn't receive an invitation to the talk, please contact Michele Barson (06) 2724347 or email mmb@mailpc.brs.gov.au to be added to the mailing list. Ditto if you have any ideas for future activities. The AWWA is also organising, (in conjunction with the CRC for Freshwater Ecology), a one day seminar on environmental flows on evening of 24-25 August. ASL members are welcome to attend. A registration fee will be charged. Further information available from John Neal, ACT Electricity and Water (06) 2483895.

Bureau of Resource Sciences

BRS limnos Richard Tilzey and Gina Newton have defected and are currently working on marine fisheries projects. Gina will shortly go to the Fisheries Policy Branch to develop a fisheries education kit for the public. Michele is spending most of her time on land degradation and soil carbon research projects, but will soon have to find her water research hat to provide the scientific input to a scoping study "Economic instruments to reduce the levels of nutrient loadings from agricultural runoff". Sharp eyed readers would have seen this study (requested by the Department of Finance) announced in the last Budget. Ralph Ogden, our ANU correspondent is busy writing up his Ph D. No news to report, but he is probably too busy to notice at the moment!

University of Canberra and CRC for Freshwater Ecology

Richard Norris reports that members of the CRC for Freshwater Ecology have been working furiously to get research projects designed and integrated across the sites (Albury, Canberra, Melbourne, Griffith and Sydney) for approval by the Management Committee and the Board. Final decisions on the approved projects probably will be made in July. We always argued that the CRCFE would foster interaction between the various groups involved, and while this has been painful at times it certainly seems to be working.

There will be several Ph.D. projects attached to these research projects; these will be advertised after they are approved. Those interested should keep an eye on 'The Australian' from about August, or contact Richard Norris on (06) 201 2543 or (06) 201 5168. The terms and conditions of the CRCFE postgraduate scholarships are closely linked to the terms and conditions of the Australian Postgraduate Awards, with stipends of about $18,800 per year.

The CRCFE also will be offering a small number of summer studentships for enthusiastic and talented students. These will be associated with various research

projects. The studentships are designed for students going from second to third year or third year to honours.

The CRCFE is negotiating to run two courses on scientific publication in conjunction with the CRCs for Vertebrate Pest Control, Plant Science and Atmospheric Meteorology. These course will be designed for graduate students and are expected to run in late January and early February 1995 in Canberra and Melbourne. Prof Vince Resh from the University of California, Berkeley will be visiting to deliver the courses for which he has won prestigious teaching awards.

Mike Copland who has 25 years experience as a teacher is working with the CRCFE basen in Albury. He is working throughout the Murray-Darling Basin and is hoping to institute a Tennessee Valley type of schools and community level water quality testing scheme. He is also writing curriculum materials on blue green algae and irrigation. For those interested Mike can be contacted on (060) 432100.

Sean Grimes recently received first class honours for his thesis on 'The efficacy of rapid biomonitoring techniques applied to running waters of the ACT'. Sean has been working in the University of Canberra aquatic biology laboratory but leaves in July for Italy and then England where he hopes to continue some of the same type of work with the British. Hoa Vu Minh has also received positive examiners reports on her MSc. thesis on mosquito habitats and predation efficiency on mosquito populations in Ginninderra Wetland, Canberra. Hoa has now returned to Vietnam where she is putting her experience to very real problems.

Richard Norris has just returned from the NABS conference in Orlando, Florida. Like other conferences, NABS had its good and not so good parts. The fun run was good as was the swim afterwards. Ian Campbell (part of the 7 or 8 strong Aussie contingent) noted that it was a wonder in a place of such obvious wealth (and a lot of water) that they seemed unable to employ a planner! Biological monitoring of water quality has really got on a roll in the USA with programmes being developed in almost every state. Some of this work is well thought out but in many cases people are just following the pack. Mike Barbour has been leading much of the debate on the development of biological methods and is now working in collaboration with Richard Norris on a couple of projects.

The Fraser River Action Plan is a multi-million dollar programme addressing problems on this Canadian River in British Columbia. The water quality component is relatively small, or as small as a study in a 230,000 square Km catchment can be. Quite a large scientific team has been brought together by the Canadians to oversee the project. These include Trefor Reynoldson and Kristin Day (National Water Research Insitute, Canada), John Wright (British Institute for Freshwater Ecology), Vince Resh (University of Calfornia, Berkeley), Peter Calow (Sheffield University) and Richard Norris (University of Canberra).

University of New England

From: Geoff Smith

In the Botany Department, Margaret Brock's seed bank project has finished its last major season of data collection. After two valuable years on the project Delny Britton is heading back to Old England. Michelle Casanova is continuing her work on algal blooms in farm dams while preparing for a new project looking at establishment of plants in wetlands.

The Department of Ecosystem Management welcomed lecturer Nick Rollings earlier in the year. His interests are in remote sensing and GIS, especially of water bodies.

The New England region is suffering an extended dry period although this may not be a problem if Andrew Boulton and Sandra Grinter keep up their field work schedule, surveying many of the rivers to the east of Armidale.

QUEENSLAND

???

VICTORIA

State Water Laboratory

Correspondent: Rhonda Butcher

This will be the very last news item from the State Water Laboratory. As of July 1 1994 we will merge with Melbourne Water Labs. to form this new whiz-bang, you beaut, joint venture. More on the exact nature of the merger in the next newsletter; hopefully by then we will know some more ourselves (rumours of our new name being Melbourne State Water Water Laboratory Laboratory are unfounded).

Meanwhile several issues of the newsletter have been produced without so much as a peep from us in Orrong Rd. Well the following is a run down on the goings on here at SWL for the last 12 or so months.

In the zoology group there have been numerous comings and goings. Gone are Vin Pettigrove to Melb. Water Yarra region (separate from the new merged group at this stage), Garry Bennison to MWL (part of new merged group), John Dean to EPA, and Allison Pouliot, who was here for a short time, to CNR. We are in the process of getting three new staff to help out with the growing mound of invertebrate samples. Frequent screams from the lab indicate that Karen Richards is still with us and persevering in the processing of samples from all over the state. In her spare time she is writing up her report on the effects of Barr Creek on River Murray invertebrates. Phil Mitchell has been delving into Yarra billabongs and contributing to Waterwatch activities, and at infrequent intervals attempting to finish the Mitta Mitta report. John McGuckin started with the group in January and will be doing fishy things in the Loddon and Goulburn Basins. Rhonda Butcher is still running all over the State with the monitoring network, partly funded by CEPA in association with Leon and Dave at the EPA. The fun really starts in October with a total of 106 sites over 12 river basins firing up. Rhonda is also on the organisation committee for an upcoming conference on Invertebrate Conservation and Biodiversity (see information in conference section), which is keeping her busy. Nick O'Connor is beginning with the Environmental Assessment Section as our Scientific Coordinator (mentioned here with the Zoology group because of his animal tendencies in the past), and giving our group a boost in environmental stats expertise.

Continuing in the spirit of change and movement that is in the air, the aquatic botany group has had its fair share. Harry Clark has moved inter-state to join MDFRC and further his interest in algal/nutrient dynamics. Jenny Lidston decided to "go west" and is attached to Murdoch University in Perth. Derek Fraser spent about 3 months peering at the algae of the Yarra billabongs before deciding to return to LaTrobe to accept a PhD scholarship. Bret Smith is continuing to traverse the length and breadth of Victoria to ascertain the algae in some Victorian lakes. Amidst writing up a revision to the mouse bioassay protocol, Hugh Richards together with Liz Dudley is pursuing the monitoring of 9 RWC storages with enthusiasm and diligence. Majella Hedger, a recent recruit, is busy probing the Murray waters for their algal inhabitants. When he is

not out in the countryside preaching of the death and damnation caused by blue green algae, Kumar Eliezer pursues his passion of identifying freshwater algae.

On the water quality side of things Joanne Harrison continues to hold back the tide of catchment studies whilst keeping an eye on the Victorian Water Quality Monitoring Network (along with Tony Schalken and Ross Dunn). Kristine Hunter and Brenton Zampatti are busy finalising the next instalment of the VWQMN Annual Report (guaranteed to be a best seller). Relative newcomers Peter Cottingham, Jodie Loone and Vivian Amenta and very newcomer Kelly O'Shanessy are continually out to lunch (or as they would put it "networking with those involved in the development of water quality strategies for the Goulburn-Broken, Loddon, Werribee and Barwon Basins"). Processes and decision support systems such as Adaptive Environmental Assessment & Management (AEAM) and Catchment Management Support System (CMSS) are getting a good workout. The second half of 1994 sees Lance Lloyd (or his evil twin Skippy) Peter and Joanne involved in evaluating the effect of irrigation drainage on wetlands. This should be interesting as treating wastewater in wetlands is often touted as a cheap and friendly method for water quality improvement. However, few studies have looked at the effect this might have on the biota of wetlands. Kristine Hunter has also been made our Resource Officer - we think this means she is licensed to mine for uranium once SWL has merged with Melbourne Water Laboratories.

La Trobe University, Albury-Wodonga Campus

Fish research has begun to gather pace at Albury-Wodonga. Preliminary analysis of the results of Gerry Closs' habitat use of fish study in Burrowa-Pine National Park has suggested some interesting patterns, with certain fish species and size-classes correlating strongly with certain types of habitat. Michael Shirley's European Perch project is proceeding well. Five billabongs have been selected for detailed study and are rigged up with data loggers which are now collecting lots of lovely data rain, hail or shine (pity all data can't be collected that way!). Michael is currently conducting his first of several seasonal sampling efforts, and is managing to catch plenty of fish despite the frigid overnight and early morning temperatures.

Monash University, Clayton Campus

From: Jacqui Jordan

Barb. Downes has returned from the NABS conference to take control of the lab while Snakey (the honourable P.S. Lake) is off terrorising the Spanish and the Americans. Despite (?) the absence of our esteemed leader, the lab and all therein are doing well. Jim Thomson and Maria Vazquez are madly making replicas of Bobby Peckarsky's recirculating stream channels, with the aim of examining the behaviour of predatory stream insects. Alena Glaister is in search of the elusive all weather rock marker (anyone out there know of a method of permanently marking wet rocks while their still in the stream bed?). Sabine Schreiber is back at the lab after weeks gallivanting around the countryside in search of Potamopyrgus and other gastropoddy things (Rumours surrounding the apparent interest of Dr Doolittle in these travels are

apparently unfounded). Jaqui Jordan is also lab bound after a successful field season up at the Oven's River billabongs (no thanks to the effort from the locals...ask Jaqui about the up front mating displays of the local male Homo sapiens!).

Danielle Warfe has just completed a C.R.C. funded Summer Scholarship examining the potential feeding preferences of grazing stream insects. Despite numerous gut analyses, and the examination of epilithon samples, she is coming back for more; in just a few weeks Dan starts her honours project, which will be something of a billabongiferous nature.

Shane Brooks is furiously writing, writing, writing...as he eargerly awaits the commencement of bigger and better things! News of his success in getting a post-doc with Sam (CONGRATULATIONS!) has increased the production rate substantially.

Victoria University of Technology, St. Albans Campus

From: Paul Boon

Those observant souls will have noted that I've moved from MDFRC in Albury to the Victoria University of Technology in Melbourne. It was all bit of a rush; we left Albury on a Tuesday, moved into our house on the Wednesday, I started at VUT on the Thursday and gave my first lecture at noon on the following Monday. thus last semester I was buried in an avalanche of preparing lectures (seven per week!), writing practicals, organising seats for butts and generally hindering the minions placed in my care. Thank heavens, this period of tribulation has now passed and I can get something useful in the 5 week period before the next onslaught. Accordingly, limnological news here is brief.

I've commenced teaching environmental (read ecological) microbiology for the 2nd and 3rd year students and one hopes that they will form a vanguard advancing microbial investigations in the years to come (where else are undergraduate biologists given the full two-year training in bacterial ecology?). We've just commenced constructing (read the plans have been finalised) a new Wetlab (poking off our extant buildings) for some $200,000 to provide for aquatic type things. A you-beaut bells-and-whistles epifluoresence microscope has been purchased, and the abundance of chemistry equipment already in the Department will keep us chemical-limnologists busy with new toys for a while. Besides me, the limnological contingent here currently includes Paul Lam (on zooplankton) and Trevor Burridge (a refugee from marine algae); Nick O'Connor has seen the light and moved to the State Water Lab. By the time this newsletter appears, we hope to have appointed three new biologists, including a molecular biologist with an environmental bent to work closely with me.

As usual, there's a mass of Hons and PhD students, about half of which are studying things wet and cold. My research continues to revolve around the methane story at Ryan's Billabong and Raftery's Swamp (funded under a LWRRDC grant) but this has been supplemented with two more recent grants. First with Ron Beckett, Jenny Ross and Reshmi Sharma at Monash (Caulfield), we have an ARC grant to develop new

ways of enumerating bacteria in environmental samples. This technique using field-flow fractionation will allow us to measure bacterial biomass directly, without the tedium of epifluorescence microscopy (Oh, so you won't need the new microscope!). Second, with George Ganf at the University of Adelaide, we have a grant from the National Greenhouse Gas Inventory Committee to quantify methane emissions from various wetlands in south-eastern Australia. Kerri Muller, who for long has subsisted on bread and water will be employed under this grant and so should soon be dining on caviar and champagne.

Environment Protection Authority

From Leon Metzeling

When I last reported the Freshwater Studies Group of the EPA had been well and truly "Jeffed", with staff numbers dropping from 9 to 3. But the corpse didn't quite die and is now going through a major resurrection. Permanent positions are back up to 7 and, thanks to CEPA funding, we have or will be putting on a further 7 temporary staff. And almost all are doing bug work!! David Tiller and myself (two of the survivors) have been very involved with the EPA's Monitoring River Health Initiative and a related R&D project which will compare rapid bioassessment techniques with traditional sampling techniques.

We've been really lucky in getting some incredibly talented people to work with us. John Dean and Ros StClair will be leading the team of people working on the invertebrate monitoring program, as well as each of them spending time doing CEPA sponsored taxonomic work (Can you believe that - that money for taxonomy!!). Ros is also involved in a project assessing the impact and recovery of invertebrate communities following a dose of rotenone. Jan Barton, another new starter recently from Tasmanian Inland Fisheries, is also working on the rotenone project and involved in other EPA activities such as reporting on the inland water quality monitoring network.

In a moment of weakness, we thought we should diversify and get an algologist. Peter Newall, formerly of the State Water Labs, is a diatom evangelist in a den of invertebrate heathens, and is working on using diatoms as a monitoring tool while developing a diatom database for Victoria. He's also working with David Tiller on nutrient stuff, ...but then isn't everyone working on nutrient stuff? David Bryant and Rebecca Hewlett have recently begun work on the CEPA monitoring program and at the time of writing, another three positions (temporary) remain unfilled. and we've moved to better, more spacious labs (still in the same building). Work has been very hectic but considerably more satisfying than a year a year ago.

Department of Conservation and Natural Resources, Freshwater Ecology Section

From: Tim Doeg

Despite "things", work continues apace at the Heidelberg campus of the Freshwater Ecology Section of the flora and Fauna Branch of the Department of Conservation and Natural Resources. John Koehn and his cohorts are still zooming around tracking the movement and habitat requirements of Murray Cod. This entails humanely placing radio transmitters in the fish and following their movement over the year - a term that actually means dressing up as electro-pop space invaders and cruising up and down the river in boats and planes...yes...planes. This producing interesting results and, apparently, homing behaviour in fish. The program is to be extended to look at Trout Cod and other species using similar techniques.

In other fishy news, Steve Saddlier and Gus are investigating spawning habitats and early survival of Trout Cod in a central Victorian river, while hunting endangered species such as pigmy perch throughout the length and breadth of the land. Later in the year, they will be doing unspeakable things to introduced predators of a Galaxiid in the high country, but more of that in a later issue.

Barry Tunbridge is madly rushing round the state rapidly evaluating optimal environmental water flows in seemingly millions of rivers for the process of changing the legal status of water entitlements in the state. The aim is to ensure that the environment gets its fair share in the carve up. Back in the city, Tim O'Brien, when not up to his armpits in "gunk" for toxilogical testing, is working on the installation of a fishway on Dight's Falls in the lower Yarra River, a significant barrier that has prevented migratory fish from entering the system for some time.

Julia Reed and Tim Doeg are busy on the "real side" of aquatic biology - the invertebrates - refining the distributions for species listed under the Flora and Fauna Guarantee Act throughout the Alpine area - a task that actually means cruising between bakeries in upland Victoria, and wandering across mountains and ski resorts in between. The hunt for the Otway stonefly is due to be completed later in the year, with the known distribution extending from Melba Gully in the east to E[illegible] Falls in the west. To those unfamiliar with the particular mountain range being studied, this is a wide area, and the species seems to be common and may be declared "safe" at some stage in the future.

You will notice there is no news from Tarmo Raadik. Well, as we speak, he is being installed as the new President of Estonia, having spent the last few months over there trying to explain to the tenants of his relatives house that was snaffled by the Russkies how their new-found joy of Capitalism actually works - "see, this is how it goes: you go to work and get paid a pittance: then you give me money and I take it home with me; get it?" When he gets back (we are opening a book on how long it takes for the locals to revolt and depose him), the preparation of a fish and invertebrate database for Victorian records will continue (more interesting than being a President).

Museum of Victoria

From: Richard Marchant

Sonia Talman, a former honours student of Gerry Quinn (Monash Uni.), has started on a C.R.C. funded project on the classification of invertebrate communities in rivers. The work will be conducted in collaboration with the E.P.A.

TASMANIA

Inland Fisheries Commission

From: Maxie Humphries (Cub ASL reporter)

Paul Humphries (Tas. correspondent with the largest nose in ASL) is about to set off for a predator-prey realtionship conference in Glasgow, Scotland. Paul has been salivating for months in anticipation of this trip - this excess saliva has certainly solved any in-stream flow problems which existed in Tasmania. Paul will resign from IFC soon to take up a position as a research fellow CRC for Freshwater Ecology, MDFRC to undertake a project on in-stream flows in the Goulbourn River.

Stuart Chilcott has been busy working on trouty things and funding proposals for endangered endangered fish with Andrew Sanger. Also, Sang is still conducting a survey of mercury levels in eels and trout around the state. John Diggle and Brett Mawbey have recently been undertaking lots of electrofishing surveys.

Big Dave Crook and Marty Jock (strap!) recently joined the HEC/IFC consultancy team. Big Dave immediately attempted to leave by getting himself lost in the Central Highlands, however, we have since attached a GPS unit to him to prevent similar incidents in the future.

Andrew Sanger has been appointed Senior Scientific Officer at IFC taking over from Peter Davies. Everyone wishes him well with his new job.

Land and Water Resources (DPIF)

Big Dave Oldmeadow and Mark Nelson at Land and Water Resources (DPIF) are beavering away with the MRHI project. In spring they hope to sample about 120 sites in the northern and western regions of the state. Chris Bobbi is conducting a water nutrient and turbidity monitoring program in the Meander and South Esk catchments.

University of Tasmania - Zoology Department

Leon Barmuta has been extremely busy doing lots of other things - in fact so many things I don't have the space to mention them all. In fact I won't mention any of them. Martin Read is busy analysing macroinvertebrate data arising from preliminary field forays. Peter Davies has been extremely busy with his commitments to the national MRHI program. He is also off to Great Britain in a few months on a fact finding mission for the MRHI , Laurie Cook is back from Spain and is working with Peter Davies.

WESTERN AUSTRALIA

???

SOUTH AUSTRALIA

University of Adelaide - Botany Department

Congratulations to Michelle Bald on her first class Honours. She worked on Wetland Wonder Plant *Triglochin* and the effect of flooding and nutrient addition on biomass allocation with a view to cleaning up sewage. The Limnology Group has grown immensely with three new Ph.D. students. Kay Morris has inched landwards after working on *Ulva* in mangroves for her Honours at Flinders. She is working on the role of nutrient enrichment on salinity tolerance of coastal wetland plants with a view to finding good plants for wastewater treatment. Botany Honours students from last year, Kerri Muller and Justin Brookes, have also begun on the Himalayan trail to Ph.D.dom. With assistance from the Greenhouse Gas Inventory Committee and Paul Boon at VUT, Kerri will assess the methane output of the South East wetlands in units of Cows.m^{-1} and then dismantle plants and soil alike to discover who is responsible. Justin Brookes, with assistance from LWRRDC and Mike Burch at the E&WS, will be searching for the critical flows in the River Murray to control agal blooms. Marcus Brownlow is working confidently on the most unbelievably well put together thesis the world has ever seen: to be bound in scarlet calf with brass clasps and satin bookmarks. Marcus Cooling is wrapping up the last of his experiment investigating what floating leaved plants do to survive variable water levels and will set out in August to find out what hard stemmed emergents do. Post-doc Sean Geary has become unpopular in the Medicine Faculty by gumming up their flow cytometer with *Anabaena.* He is investigating the uses of that machine in studying phytoplantkon by looking at the effects of competition and resource limitation on algal growth rates. Supreme Commander George Ganf is in Indonesia at a Conference on Tropical Limnology, speaking misty eyed on algae and Uganda.

University of Adelaide - Zoology Department

From: Stuart Blanch and Adrienne Burns .

Keith Walker has left his troops behind and headed to the USA to explore the Mississippi River. After spending weeks preparing his keynote address with Fran and Jim for the conference "Sustaining the Ecological Integrity of Large Floodplain Rivers" in Wisconsin, USA. As Australasian Editor for "Regulated Rivers" Keith would like all prospective Australian authors to know that Reg. Rivers manuscripts can be submitted in electronic form. For more information contact Keith.

Fran's PhD thesis entitled "Littoral Ecology of a Regulated Dryland River (River Murray, South Australia) with Reference to the Gastropoda" has been accepted. Markers reports were positive even after their marathon read. Congratulations Dr Sheldon!! Jim Puckridge is moving into the manic data analysis and writing stage of his PhD.

Stuart Blanch spends his time tackling the River Murray Hydraulic Model but now has regular escapes to the river where he is embarking on a study of the effects of stable and fluctuating water regimes on *Vallisneria gigantea*. Adrienne Burns has collected the last of the wooden blocks from her water regime study. There are many hours of counting and identifiction of the green beasts ahead. Honours student Marcus Wishart has been invetsigating methods of drying lettuce to isolate diets of nutritional status to feed his snails. The aroma of singed greens wafts from the laboratory. Lorenzo has returned from holidaying in Italy. He's expecting good results from his current fishing trip to Berri catching Carp, and a World Cup soccer win for his homeland.

Professor W.D. (Bill) Williams has taken early retirement from the Zoology Department. Apart from the fact that he has volunteered to give a few lectures for the remainder of this year and next, Bill plans to spend his well earned extra time publishing a backlog of collected information. We wish him all the best!

NORTHERN TERRITORY

*************STOP PRESS**********

The NT Limnological community has been devastated by the recent announcement that its foremost freshwater ecologist, Peter Dostine, will be leaving Jabiru and heading for the Big Smoke. Yep, Darwin. Peter will be taking three years LWOP from the OSS to take up a study with the CCNT on the Gouldian Finch Recovery Plan. The loss to OSS is a huge gain to Darwin limnos as Peter announced he would be "very grateful to anyone who could help fill those idle hours of lunch and tea breaks with some worthwhile taxonomic pursuits".

Such is Peter's versatility that he is little phased by this quantum leap in research direction and he's convinced their decline could be related to our poor understanding of their larval stage!?! This pressing and challenging conservation problem will be well served by this talented researcher and we wish him all the best.

From: Michael Douglas

With fieldwork finished and the creeks all dry, its been back to the lab for some serious sorting. Whilst there is still lots of taxonomy to go, the end is in sight and I'm even starting to get a few results and will presenting a joint paper with Simon Townsend at the Management of Tropical Savannas conference in Townsville next month.

The arrival of fine weather has brought the annual flood of visitors. The first, Chris Mathai from the EAWAG in Switzerland, came via Melbourne and spent time in Kapalga and Kakadu comparing notes on the striking similarities between his permanent streams in the Swiss Alps and temporary streams in tropical savannas. More recently, the LWRRDC Water/Irrigation working group were in Darwin for their internal review and took a few days to visit Kapalga to review the aquatic part of the CSIRO Kapalga Fire and Water Project. Whilst in Kakadu the party were given a tour of the ARRI and enjoyed visits to a few very healthy sites (8.5 on the Blackmore Index) of aquatic significance.

One visitor who appears determined to stay is Cyrus Edwards: masters student from UTS, supervised by Richard Lim and Ross Jeffrey. Blessed with the enthusiasm of someone who hasn't started sample sorting and armed with a bilge pump capable of sucking entire river systems dry, he has been rapidly eating his way through our native wildlife (starting with the monotremes) since arriving in May. Cyrus has begun work on a project investigating the patterns in the benthic communities of a stream system (the Finniss) impacted by pollution from past mining at Rum Jungle. He's based in the bustling metropolis of Batchelor but has been doing the rounds (PAWA, CCNT, ARRI, CSIRO and the NT Museum) seeking advice on sampling design, hints on crocodile wrestling and somewhere to roll out a swag. Stay tuned!

Power and Water Authority

From: Simon Townsend

The Northern Territory's Waterwatch coordinator, Kate Gowland, started work recently with Water Resources Division. Waterwatch is a joint federal and NT government initiative which aims to raise community awareness of water quality issues. Within schools the initiative will focus on water quality education, whilst community groups will undertake monitoring activities.

Two new employees, Danielle Lloyd and Armando Padavan, started with Water Quality Research and Evaluation Branch of Water Resources Division this month. One of the important tasks of Dannielle will undertake is to inform the public of the Branch's scientific findings, including their management significance. Armando is a scientific officer with the Branch, his first task is to investigate the water quality of Darwin Harbour.

Simon Townsend recently enrolled at the Northern Territory University in a Ph D by part-time study. Simon will research the affect of reservoir morphometry and retention time on the physical, chemical and phytoplankton limnology of two water bodies near Darwin.

Office of the Supervising Scientist

From: Peter Dostine

The aquatic biology ship has set sail for uncharted seas with the firm hand of Captain M. Finlayson at the helm. Thar she blows ol' cap'n sir! Oh for the good old whaling days! Fresh faced recruit Barbara Klessa has been press-ganged into servitude before the Wild M'eight (But seems happy enough learning the inticacies of mites, nymphs and other sea dragons).

Amongst all the other changes occurring within the OSS, the Jabiru Institute (nee ARRI) will now likely be named ERISS. (work it out for yourselves).

On a more sober note, Chris Humphrey is on a busy round of meetings for the MRHI and other matters relating to long-term monitoring. It seems that MRH funding will be forthcoming to continue the project that will not die - hopefully we will soon have a decade of data on benthic community structure in the South Alligator River. Bob Pidgeon is off to Canada to present a paper on the ERISS biological monitoring work at a conference on environmetrics at the invitation of well known statistician Abdel El Sharaawi. ERISS, ANCA and CCNT will be hosting a training program for visiting wetland managers in late July/ August.

Conservation Commission of the Northern Territory

From: Roger Jaensch

Inventory of wetlands of the sub-humid tropics

During 1993 and early 1994, I spent a fair bit of time wading around ephemeral blacksoil wetlands in the NT between latitudes 15 and 20 South. The largest of these, covering up to 2000 km2 (Tarrabool Lake), are in the Barkly internal drainage system. The purpose of the work (a CCNT project) was to fill a major gap in knowledge of NT wetland types, flora and fauna, for input to ANCA's long-term project A Dictionary of Impotant Wetlands in Australia. Although the emphasis was on description of wetland plants and waterbird conservation values, I did note some smaller scale details!

All lakes and swamps had filled following heavy monsoonal rains in February '93. The water bodies, whether covered with shrubs/trees or open, were milky-white, generally with no obvious change in 'colour' over 12 months despite no further inflow. All were strictly fresh: opportunistic tests of salinity at several lakes yielded values in the order of 100-200 parts per million. Invertebrates noted included a freshwater crab and a large aquatic snail. In addition, one part of Lake Woods covered with a dense mat of nardoo marsilea sp. became clear after about 12 months and invertebrates such as odonates and notonectids were then obviously abundant. The few lakes fed by creeks with permanent waterholes support 6-7 fish species, including the catfish, *Neosilurus argeneus* and the glassfish *Ambassis mulleri.*

The project confirmed the importance of the NT's tropical ephemeral wetlands for waterbirds: in the order of 0.5-1.0 million individuals were using the wetlands in April 1993; internationally significant numbers of migrant shorebirds occur; and breeding colonies of egrets, ibises and pelicans are scattered throughout. The NT's largest lignum *Muehlenbeckia cunninghamii* and coolibah *Eucalyptus microtheca* swamps occur in the Barkly - though there is only one (smallish) conservation reserve in this otherwise heavily grazed region. The inverterate fauna is scarcely known: baseline surveys are needed to complement the now swelling documentation of the conservation values of these wetlands.

Pre-Ramsar Workshop on "Wise Use of Tropical Wetlands" -- see Confernce Capers - "Forthcoming Workshops and Conferences"

Formation of an "Australian Wetlands Alliance" -- see "Announcements" section.

LETTERS TO THE EDITOR

During 1993 I was puzzled to note the crash of invertebrate populations in some of "my" swamps. I could not think what the cause might be. Then I found the answer on page 11 of the March 1994 Newsletter (32(1))! My swamps must have been receiving the dreaded "acidic mice drainage"! There was the mouse plague sweeping South Australia and, silly me, I had not thought to make the obvious connection. I am pleased to report that populations have now recovered.

Sincerely,

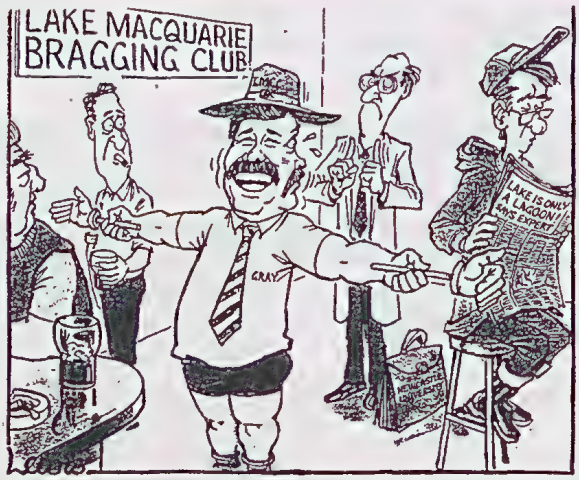
Jan White
Centre for Environmental and Recreation Management
University of South Australia (Salisbury Campus) Salisbury East SA 5109

Over the years I have been Having a battle with our local council over the claims about Lake Macquarie, a large coastal lagoon, which is the centre piece of the City, both geographically and literally.

Firstly a sign appeared on roads entering the city claiming it was Australia's largest salt lake!! I protested and most of them came down, but to my dismay one still exists near my home (perhaps to spite me). In their place, another sign appeared claiming the lake was the largest coastal saline lake in Australia. Again I protested, as two of the Gippsland Lakes are bigger. They took no notice, so I gave them up as intentional ignoramuses in the name of tourism. None of this was aired publicly.

Then in March this year our ambitious City Manager, Mr Gray, decided Lake Macquarie was the biggest coastal saline lake in the world. This was too much and I had to expose him. The result is the enclosed newspaper clippings. I might say that although it has shut him up, the road signs persist.

Dr Brian Timms
Department of Geography, University of Newcaslte, Callaghan, NSW 2308



POSTCARDS FROM THE SEDGE

STREAMS AND SPRINGS IN THE FLINDERS RANGES.

As the sun sets, the ridges of ABC quartzite towering over the gorge glow with a fiery deep red against the dull olives of the native pine and the washed out blue of the sky. Galahs flying to their hollows in the red gums call to each other, and the occasional bat begins to emerge. Below the twisted gums with their charismatic shapes and enduring splendour, a small creek gurgles, beginning to increase in discharge now that evaporation is declining. Great swathes of lush *Cladophora* trail down its course, sometimes breaking free and travelling downstream to become stranded where the water sinks into the gravel. Below the stream, most of the water flows in the hyporheic zone, disturbed only by the occasional flash flood that scours and redistributes the sediments, and by the PVC wells that suck water and hyporheic invertebrates from the zone at irregular intervals. Down here, nitrogen is more concentrated than in the surface stream, and where surface water upwells, the *Cladophora* and other plants rapidly soak it up. In the surface stream, a rich assemblage of invertebrates live although notable exceptions include stoneflies, megalopterans and many types of caddisflies. But what the stream may lack in diversity, it makes up for in numbers for abundances are high and turnover/productivity is great. As the night creeps over the stream, bringing mercifully cool conditions, crayfish emerge from below cobbles and boulders and forage in the pools. They disturb the occasional sleepy tadpole whose seasonal grazing appears to influence diatom and algal abundance in parts of the stream during spring and early summer. A mopoke begins its mournful call as the billy boils for the evening's last cup of tea.

Next morning, after a surprisingly cold night, the famous porridge heralds a start to one of the most beautiful field days available to Australian limnologists. Packing camp, we drive up an old creek bed to the Hills of Oratunga, made famous by the evocative painting of Sir Hans Heysen, and after a short walk over dry dusty country, hammered by the incessant incisors of lagomorph largesse, we find ourselves in a narrow gorge where mosses abound in the crystal clear waters of one of the many springs in the Flinders. Here, a nitrate gradient from source to sink occurs, causing equivalent gradients in algae and perhaps invertebrate assemblages except when floods "reset" the whole sequence. Lush mats of *Spirogyra* and other filamentous greens mark where subsurface water seeps into the spring. Its time for another set of bug samples, some more collections of water chemistry, some more transects of aquatic plants, another reinforcement of the pleasure we derive from "messing about in streams".

Andrew Boulton
Dept. Ecosystem Management, University of New England, Armidale, NSW.
(formerly Dept. Zoology, University of Adelaide - *thank goodness other Ed!* - perhaps a "Mills and Boon" Award could be established for the 'best' postacrd???!!)

CONFERENCE CAPERS

Forthcoming Workshops and Conferences

- It is proposed to hold an AWWA-CRCFE Short Course on *Regional Water Quality Management* at the University of Canberra from 26 - 28 September. Contact CRCFE, University of Canberra (06) 201 5167 for additional information.

- The AWWA is also organising, (in conjunction with the CRC for Freshwater Ecology), a one day seminar on environmental flows on evening of 24-25 August. ASL members are welcome to attend. A registration fee will be charged. Further information available from John Neal, ACT Electricity and Water (06) 2483895.

- Expressions of interest are sought for a one day conference on *Geomorphology and River Health in New South Wales* to be held at Macquarie University on Friday 7 October 1994. For further details contact Gary Brierley, School of Earth Sciences, Macquarie University Phone (02) 850 8427.

- Expressions of Interest are called for a Conference on *Invertebrate Biodiversity and Conservation*, to be held at the University of Melbourne from 27 November to 1 December 1995. The conference will focus on issues relating to invertebrate biodiversity and conservation of invertebrates from marine, terrestrial and freshwater systems. Contact Dr Tim New at La Trobe University, Bundoora for more information. Also, see section in "Announcements".

- To celebrate the centenary of the 1894 Horn scientific expedition to central Australia, the Invertebrate Survey Department of the Museum of Victoria is organising an expedition in October 1994 and in March 1995 to collect invertebrate fauna from four main study areas in central Australia. The areas chosen for study are: West MacDonnell Ranges (Simpsons Gap and Ormiston Gap National Parks), Finke Gorge National Park, Watarrka National Park (Kings Canyon) and Uluru-Kata Tjuta National Park (Ayers Rock and the Olgas). The Museum is calling for volunteers for the expedition and a registration form is available from Alan Yen at the Museum, phone (03) 419 5200.

- Pre-Ramsar Workshop on "Wise Use of Tropical Wetlands". Serious planning for an international workshop on wetland research and management, slated for the week preceding the March 1996 Conference of Parties to the Ramsar Convention on Wetlands of International Importance, has begun. The CCNT proposes to host the event, in Darwin, and expects the week to be divided about evenly between indoors sessions and field trips (weather permitting). The tentative theme is "Wise Use of Tropical Wetlands" and sub-themes may include pastoralism in wetlands and indigenous usage of wetlands. Many of the international participants will continue on to the Ramsar meeting in Brisbane.

- The second Australian Conference on Biological Nutrient removal from Wastewater (BRN2) will be held in Albury from 4 - 6 October 1994. The conference is convened by AWWA and supported by the International Association of Water Quality (IAWQ), see David or Rhonda for details.

- Abstracts are still being accepted for the 4th International Conference on Wetland Systems for Water Pollution Control to be held in Guangzhou, China for 6 - 10 November 1994. David Mitchell (MDFRC) is a member of the International Program Committee and can provide further information. David is also a member of the Program committee for an IAWQ-SIL.

- Fourth International Symposium on Off-flavours in the Aquatic Environment is being organised on behalf of the IAWQ Specialist Group on Tastes and Odours in Water. Symposiums will be held 2 - 7 October 1994 at the Ramada Grand Hotel, Adelaide, South Australia. Further information can be obtained from Mr Keith Hayes, Australian Centre for Water Quality Research, Private Mail Bag, Salisbury, SA, 5108. ph (08) 259 0223 or fax (08) 259 0228.

- The 1994 National Greening Australia will be held at the Fremantle Hotel, Fremantle, Western Australia. The theme of the Conference will be a *Vision for a Greener City: the role of vegetation in urban environments,* with topics including the environment of urban and surrounding areas, planning for conservation and development, and management of urban and surrounding environments. Registration brochures can be obtained from Motive conventions, GPO Box M973, Perth WA 6001. Ph (09) 322 2666, fax (09) 322 1417. Enquiries should be directed to Jenny Dyer, Secretariat, Motive Conventions.

- The annual conference of the Ecological Society of Australia will be held from the 28th to 30th September 1994 at the Araluen Centre, Alice Springs, NT. Details available from Steve Morton/ Mark Stafford Smith, ESA94, PO Box 2111, Alice Springs, NT 0871. Ph: 089-500111 Fax: 089-529587 Email: trevor.hobbs@dwe.csiro.au. Abstracts are due before the 31st July 1994.

- First Announcement of an "Ecology of Large Rivers" Conference to be held in Krems in the Wacchau district on the Danube, Lower Austria, from the 18 - 25 April 1995. Papers are invited concerning the application of theoretical limnology to the management of large rivers. Further details will be supplied in the next ASL Newsletter.

- The XXVI Congress of the International Association of Theoretical and Applied Limnology (SIL) will be held in Sao Paulo, Brasil, 23 - 29 July, 1995. The theme of the Congress will be *Water as a limiting resource: conservation and magaement.* Papers from all aspects of limnology are invited. Registration closes 31 December 1994. Field excursions will be conducted during the Congress to the Amazon, Pantanal lakes, Parana River, and much, much more!! For more information contact R. Henry, General Secretary, University of Sao Paulo State - UNESP, Depto. of Zoology - Institute of Biosciences, C.P. 502, CEP 18618-000 - Botucatu - SP, Brazil.

THE 1995 ASL CONFERENCE

17 TO 20 SEPTEMBER 1995

JENOLAN CAVES - BLUE MOUNTAINS

The Congress for 1995 will be held in New South Wales. We have managed to persuade the staff of Jenolan Caves House in the Blue Mountains that being overrun by up to 200 freshwater scientists for 3 days is a good idea! They obviously have no idea of the havoc that certain parties can create. We have booked the entire place for 17-20th September and it is a stupendous venue. Set deep in the heart of the Blue Mountains surrounded by bush, there are walks starting outside the front door as well as an extensive cave system for which tours will be organised for those interested. We look forward to seeing as many of you as possible. Further details will be in future newsletters but if anybody can't wait, contact Jane Growns ((02) 3340709) or Julie Currey ((02) 3340 709) at AWT-EnSight (Yes we've changed our name once again!).

ANNOUNCEMENTS

NON MARINE ALGAE

1. The Guide to Aquatic Cryptogams is now available (as ASL Special Publication No.10). It includes keys and descriptions to the genera of larger fungi, lichens, macroalgae, liverworts and mosses of Australian inland waters. You will notice too that there is plenty of room for you to annotate the guide. I hope and expect to receive plenty of additions, annotations and corrections over the coming years. Of particular interest are new taxa (or ones that don't key out properly), new distribution records and new references. Please keep me informed. In return I hope to produce irregular (brief) updates to the guide - e.g. listing new publications or new taxa - which I will include (editors willing) in this newsletter.

2. The Bibliographic Checklist of Non-marine Algae in Australia is nearly complete (thanks to Sandra Day, Rosemary Wickham, Peter Tyler and myself). The data are on disk and now need a little fine tuning before conversion into a hard copy (for the Flora of Australia Supplementary Series). If you publish anything that mentions a non-marine alga in Australia (even the merest mention of a troublesome slime) I would like a reprint or at least a copy of the relevant pages...please. In the short term at least, the database will be updated from the National Herbarium of Victoria.

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National Herbarium of Victoria
Royal Botanic Gardens Melbourne
Birdwood Ave
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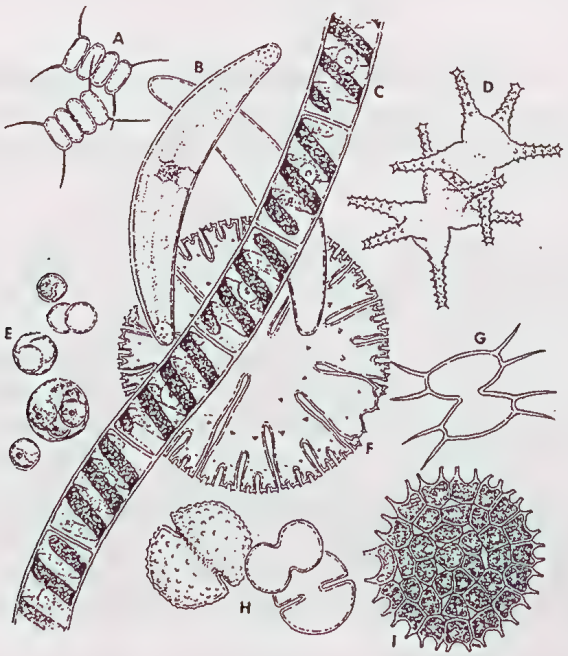
Fax: 03-655 2350
E-mail: Entwisle@botany.unimelb.edu.au

ASL Special Publication No.10:

Aquatic Cryptograms of Australia - a Guide to the Larger Fungi, Lichens, Macroalgae, Liverworts and Mosses of Australian Inland Waters; edited by T.J.Entwistle, 1994; pp. 151; A4 format, spiral bound.

This guide, which includes keys, illustrations and notes to the genera, is now available. Each member of the ASL is entitled to receive **one** copy free. Additional copies can be bought for $25 each. Copies will not be sent to members unless they specifically request them on the order from at the back of this Newsletter.

Members will remember that the ASL executive decided some time ago that Special Publications would no longer be sent automatically to the whole membership. Libraries and other institutional members were the only exceptions and would continue to receive ASL Special Publications without making a request. This change in policy was prompted by increases in postal charges.



PROPOSAL TO ESTABLISH AN AUSTRALIAN BIODIVERSITY COUNCIL

Margaret Blakers
Chairperson
Australian National Section, International Council For Bird Preservation
25 March 1994

Background

In 1992 biodiversity was placed firmly on the international and national agenda with the signing of the International Convention on the Protection of Biological Diversity. While conservation of flora and flora has long been the subject of research, public debate and action, the convention provides a new political focus to which governments and communities must respond.

Australia's response is especially important because we are solely responsible for the conservation of about 7% of the world's biota, most of which is endemic. As a developed country, with the added advantage of a single political system covering a whole continent, our progress is not only important in itself, but also a measure of what is achievable.

Scientists and scientific societies have a fundamental contribution to make to the conservation of biological diversity. They have knowledge and views to give, and a critical role in explaining to the public what biodiversity is and why it is important to conserve it.

In practice, it is often difficult for individual scientists to take part in public conservation debates. It is also problematical for scientific societies to adopt the dual role of professional organisations and advocates for the environment. Further, the fact that each society deals with only a segment of the biota or biological process, means that none is in a position to speak for the whole. As a result, scientific insights are rarely communicated effectively to the public or decision makers, leaving conservation groups, government and industry as the main protagonists in debates about biological diversity.

There is a need for a body to organise and channel scientific advice and opinion on biodiversity conservation. This paper proposes the establishment of an 'Australian Biodiversity Council' to fill this role. It would be an independent, credible and scientifically based advocate for the conservation of biological diversity.

Examples of bodies which play a similar role on other issues include industry advocates such as the Australian Mining Industry Council, forums such as the International Panel on Climate Change, and smaller groups such as the Evatt foundation which promotes the goals of the labour movement.

This paper outlines some key features of the proposed Council, and a process for its establishment. It is a basis for discussion.

Purposes of the Proposed Council

To be a credible and scientifically-based advocate for the protection of biodiversity in Australia and internationally, as an essential basis for achieving ecological sustainability.

To educate the community about the concept of biological diversity and raise public and political awareness of its importance and value.

To encourage and facilitate the development of mechanisms for protecting biodiversity which recognise the political, social and economic context in which they must be implemented.

To help scientists, scientific societies and others with expertise in the conservation and management of biodiversity to participate in public debates and decision-making processes.

Outline of the Structure and Function of the Proposed Council

- The Council should comprise scientists and other people with interest in biodiversity and expertise relevant to public policy and advocacy (eg. geography, community development, political science, law, economics, communication and education)
- The Council should be linked to key scientific societies in a way which facilitates communication and co-operation, but preserves the independence of both the Council and the societies.
- Council members should act as individuals, not representatives, and should be individually committed to the importance of protecting biodiversity.
- The Council should have no more than 12 members so it can act as an effective decision making body, and keep meeting and running costs to a reasonable level.
- The Council membership at any one time need not reflect all biological or other disciplines, or all geographical areas, but over time should attempt to do so.
- The Council should develop a high public profile as a firm independent advocate for the conservation of biodiversity, by addressing issues of current concern, and raising new issues for public discussion. It should aim to set the agenda rather than react.
- The council should deal primarily with issues in Australia or where Australian actions or interests impact on biodiversity outside Australia, but should also promote international issues.
- It should meet several times a year (three or four?).

- It should be supported by a small secretariat (say two to four people) who function primarily by working with people in existing institutions and elsewhere to produce statements, reports etc.
- It should operate initially for three to five years and seek funding for this period primarily from philanthropic organisations and other non government sources.

Possible Activities of the Council

- Prepare and make public statements about specific issues on its own behalf and/or as part of a coalition of scientific and other interest groups.
- Prepare position papers and discussion papers on issues, priorities for action, etc.
- Auspice events to promote public discussion (talks, visits, media etc.).
- Lobby government and other institutions and organisations publicly and privately.
- Respond to government actions.
- Respond to government processes where consistent with the priorities set by the Council.
- Actively encourage and help scientists and others with expertise to participate in the public debate (eg. through training; maintaining database of people/expertise as a referral service for the government, media etc (in conjunction with scientific societies)).
- Maintain an active co-operative relationship with scientific societies.

Process

January-March	Hold informal discussions about the proposal with people and organisations listed in the attachment, and other people suggested by them.
January-April	Seek funding for workshop and follow up work.
March	Circulate preliminary discussion paper outlining the proposal.
End April	Assess level of in-principle support from scientific societies and decide whether to proceed with workshop.
May	Prepare and circulate issues and options paper, including options for process, structure and funding, as a basis for workshop discussion. Invite scientific societies to nominate people to attend workshop.
June (either the weekend of the 18/19 or 25/26)	Workshop to develop detailed proposals for purpose, structure, function, and process and nominate steering group to proceed with next stage. Participants--nominees (but not necessarily members) of participating scientific societies (this will allow non-biologists with relevant expertise to attend). Location--Melbourne. Format-- structured workshop discussions with independent facilitator.
June	Establish steering group
July-August	Steering group circulates workshop [illegible] and finalises detailed proposal.
August-October	Steering group requests formal endorsement of concept and proposals from scientific societies.
May-October	Initiate discussions with philanthropic organisations to seek funding.
August-October	Select Council members.
November	Establish Council.

Comments

Comments on the proposal and discussion paper are welcome, and particularly suggestions about issues that the workshop should address. Scientific societies are requested to indicate whether they support further discussion and development of the proposals by the end of April, if possible.

Contact

For further information, and to provide comments, please contact:

Margaret Blakers
Chairperson,
Australian Section, Birdlife International
20 Heller St.
BRUNSWICK VIC. 3056
Ph 03-380-4072

UPDATE FOR ASL MEMBERS

The ASL Secretary (Dr Richard Marchant) attended the preliminary meeting - more information will be forthcoming in the next newsletter.....

Sheep that pass in the night

ATTACHMENT. List of Scientific Societies

For the initial discussions, "scientific societies" are taken to be organisations

- concerned with Australia's flora and fauna
- with a national focus
- whose objectives include furthering the scientific study, knowledge and conservation of the organisms or environmental parameters in which they specialise.

Generally groups whose primary objectives concern furthering of science as a profession, or whose primary functions are management or a broad environmental agenda are excluded at this stage. The need to widen the definition could be considered by the workshop or the Council.

Association of Australian Paleontologists
Australasian Plant Pathology Society
Australian Bird Studies Association
Australian Coral Reef Society
Australian Mammal Society
Australian Marine Sciences Association Inc
Australian Mycological Society
Australian Pollination Ecology Society
Australian Society for Fish Biology
Australian Society for Limnology
Australian Society for Microbiology, Microbial Ecology Special Interest Group
Australian Society for Phycology and Aquatic Botany
Australian Society of Herpetologists
Australian Systematic Botany Society
Birdlife International (formerly International Council for Bird Preservation)
Genetic Society of Australia
Indigenous Flora and Fauna Association
Palynological and Paleobotanical Association of Australia
Royal Australian Ornithologists Union
Royal Zoological Society of NSW
Southern Connections
The Australian Entomological Society
The Ecological Society of Australia
The Malacological Society of Australia

INVERTEBRATE BIODIVERSITY AND CONSERVATION

27 November - 1 December 1995
Melbourne University, Melbourne

Conserving invertebrates is beginning to be recognised as a valid issue or component of the conservation of Australia's biodiversity. In the past most effort has focused on the charismatic megavertebrates and virtually ignored the invertebrates. In the last couple of years two conferences have been held dealing with conservation issues at which invertebrates were included in the program.

The first, "Conservation Biology in Australia and Oceania" was run by the Centre for Conservation Biology of the University of Queensland and the Queensland National Parks and Wildlife Service, in October 1991. The conference included 134 oral papers and 45 posters. The session on invertebrate conservation included 5 papers which dealt primarily with terrestrial invertebrates. The only fresh water paper on invertebrates was presented by Pierre Horwitz on the issues of translocation of crayfish. Stuart Bunn et al. presented a poster on stream invertebrates.

The next conference, "Towards Biodiversity and Conservation", occurred in July 1993 and was organised by the Museum of Queensland. This conference dealt solely with invertebrate conservation and biodiversity. Of the fifty odd papers presented only 4 dealt with fresh water invertebrates.

There has been considerable conservation work done on fresh water invertebrates in Australia and it is the conference committees hope that a session dealing with the fresh water ecosystem will be well supported by ASL members. The scope of the conference should include something of interest for all invertebrate biologists and anyone who is even remotely interested in conserving biodiversity.

Should anyone be interested in attending the conference please fill in the form at the back of this newsletter. For more information contact me directly on (03) 508 2476.

Rhonda Butcher
State Water Laboratory

ARTICLES

AUSTRALIAN CAPITAL TERRITORY

JOINT MEETING OF ASL AND ECOLOGICAL SOCIETY

From: Michele Barson

Last year's AGM was enlivened by discussion of ASL's political profile (lack of one), how we might develop one, and along the way influence the water related policies of governments. Most members agreed that ASL should "do something"-but what and how? ASL's political agenda has been discussed at the last couple of Executive teleconferences and a shopping list of issues prepared by Leon Barmuta (see two Newsletters ago) for discussion as well as some suggestions for preparing a list of experts prepared to speak on their own behalf about limnological issues.

The Ecological Society of Australia has also been discussing how to establish a group of professionals in the environmental sciences to provide rational and independent advice and comment to assist in policy formulation (see President's Report, Bulletin of the ESA, 23:3, September 1993). The issue dominated discussion at the Science Policy Symposium held as part of the ESA's last conference (Canberra, September).

We decided to hold a joint ASL/ESA meeting to tackle this question, asking Peter Cochrane from Simon Crean's office to outline some of the policy processes and suggest how we might participate most effectively. Peter came with excellent credentials for this task; prior to joining the Minister's staff (in John Kerin's time) he was an ecologist with ANU's Ecosystems Dynamics group.

He outlined the vast volume of material that comes through the Minister's office each week and the role of the Ministerial Advisers, who filter this material, reading correspondence, (Peter reads several hundred letters a week) seeing people and attending meetings on behalf of the Minister. Peter confirmed our suspicions, ASL has no profile in the office, scientific societies generally don't but they can be very influential on particular issues, usually through their lobbying of groups within government agencies. Some members of ASL are consulted on issues for which they have well known expertise. He had the following recommendations:

Letter writing

- a good letter writing campaign brings issues to the attention of the Minister and the senior bureaucrats who usually prepare the response
- longer letters are far less likely to be read, make key points up front and offer to provide further information

- ensure that you ask for a response by for example inviting comment or asking a question, otherwise the letter will be marked for information, filed and probably forgotten
- well written letters will help establish that you are a key source of ideas and someone whom it would be useful to consult, Peter noted that the quality of the letter was more important than who it came from

Submissions

- better to have a one page summary of key issues and offer to provide further information (include contact phone numbers) than 40 pages of careful argument
- timing, timing, timing, if a submission is one day late it won't have any influence
- opportunities to make submissions (written and/or verbal) on water-related issues include House of Representatives and Senate Standing Committees' inquiries

Networking

- contact with key departmental people and ministerial advisers is the most effective route to influencing decisions
- need to identify and build relationships with key people, at the Commonwealth level for ASL members these people would be working in agencies such as:
  DPIE (especially Land Resources Division and Bureau of Resource Sciences)
  Department of Environment, Sport and Tourism
  Commonwealth Environment Protection Authority
  Land and Water Resources Research and Development Corporation
  DEST and DPIE Ministers' offices
  Murray-Darling Basin Commission

From Peter's point of view the most effective way of getting scientific input from ASL members would be to prepare a list no more than two pages long of key contacts for particular issues (perhaps 2-3 names per issue). These people would be speaking on their own behalf and would need to be easily contacted. The list should include their telephone and fax numbers and email addresses. It would be helpful if some thought was given to geographical location and diversity of views held when the list was compiled. People would need to be prepared to respond at very short notice.

Compilation of a Directory is under way (volunteers have been invited to send their name, address, telephone and fax numbers, noting their area of expertise to Richard Marchant). I suggest that we make some more formal arrangements for keeping a watching brief on issues of particular interest, to ensure that we are notified of opportunities to make submissions to enquires and to comment on draft reports. The next ASL Congress at Rottnest Island might be a good venue for follow up.

We are hoping to run several ACT Branch (or is it twig- where are all the limnologists in Canberra?) meetings in 1994. Possible topics are "CEPA's Role in Water" and "How to lobby your Minister for the Environment" Suggestions for other topics invited. If you are an ASL member living in the ACT and you didn't receive an invitation to the

December meeting, please contact Michele Barson (phone 06 2724347 email mmb@mailpc.brs.gov.au) to be added to the mailing list. ASL members who are frequent visitors to Canberra might also like to receive notification of the meetings.

Since this meeting, a Cabinet reshuffle has resulted in Senator Bob Collins' appointment as Minister for Primary Industries and Energy. Within the portfolio he has responsibility for water resources issues. His adviser in this area is Bill Nagle. I think Peter's suggestions are still relevant. We need to put together a contact list to send to Bill Nagle. I'll shortly review the list of volunteers, identify any major gaps and talk to the Executive and any one else interested about additional names. Email me (see address above) if you are interested in making an input.

THE MURRAY-DARLING BASIN WATERBIRD PROJECT

The RAOU Murray-Darling Basin Waterbird Project is a new project which commenced operations in January 1994. It is to be run along similar lines to the Australian bird count. Thus, its success will depend largely on the recruitment of volunteer bird watchers. The Murray-Darling Basin (MDB) contains Australia's largest rivers, some of its most extensive swamps and numerous small temporary and permanent wetlands. At present there are no long term Basin-wide data for all species of waterbirds which use the wetlands in the Murray-Darling Basin. The aim of the MDB waterbird project is to collect Basin-wide data for at least 5 years. The project has funding from the Murray-Darling Basin Commission for the first three years.

Some of the questions the project intends to answer are...

1. What are the characteristics of wetlands that are essential for the survival of each species of waterbird?
2. What are the seasonal and long term changes in the relative abundance of waterbirds in the MDB wetlands?
3. What is the role of ephemeral (temporary) wetlands in maintaining waterbird populations?
4. Which wetlands are essential to waterbirds as refuges, breeding grounds and feeding areas in the MDB?

The project is also of international importance, as Australia is a signatory of the Ramsar Convention on wetlands, and has treaties with China and Japan for the protection of migratory birds, many of which visit the MDB.

I would like to hear from anyone wanting to become a volunteer waterbird observer. If you live in the Murray-Darling Basin, or visit the region at least four times a year and want to participate in the project please contact me at the address below. I will provide you with further background information, registration sheets, and details on how to conduct the survey.

Michael Hutchison (Project Co-ordinator)
Locked Bag 600, St James Post Office, Sydney NSW 2000
Phone: 02 267 8515

MARY RIVER WATERWATCH PROJECT

In 1993 ASL donated $200 to the "Mary River Waterwatch Project" the following report on that project comes from Peter Oliver (DPI, Gympie, Qld).

The Mary River Waterwatch Project is a school and community environmental education activity. Its purpose was to build up a network of schools and community groups along the River system and its catchment, communicate their findings to the local community and each other, and seek ways to improve the situation as necessary. The project had four phases:
- A Network Building and Training Phase,
- An Action Phase
- The Mary River Catchment Crawl
- and, the Congress Phase (where participants in all phases met and discussed findings, actions taken and directions for the future.).

Twenty teachers, landcare members and DPI officers attended the Network building and training phase. Ten schools and three Landcare groups were involved in the second phase. On the Catchment Crawl 32 students from seven of the ten participating schools, six adults (teachers and Landcare members), and interacting with fifteen guides (farmers, scientists, engineers, environmentalists) made their way down the Mary River system (305 Km) by bus over five days, investigating land use issues, riparian zone vegetation, water quality and other aspects of the Mary River system. The students started out at Maleny on the Blackall Range and in the Conondale Ranges monitoring stream and catchment quality seeking links between the land, water and eventually the coastal marine ecosystem into which the stream flows.

Students ranged in age from twelve to seventeen (primary and secondary). Material and situations presented to them usually a type of "power" orientation, starting out simple and ending up fairly complex with students moving along this continuum as they were able. The expedition proved to be a valuable awareness raising exercise, not only for the participants, but also for the wider community. Students gave radio, TV and newspaper interviews. By the time we got to Maryborough on day four, people that we met "in the street" heard student perceptions of the state of the catchment and the river itself. On the last night students gave a presentation of their findings to the Mayor of Hervey Bay City and the Hervey Bay Junior City Council. This communications exercise, not only informed this audience but also helped the students assess the value of their participation.

Around ninety people attended the Mary River Congress at Kenilworth (not bad for a little town of 300 people). Information presented by students could best be described perhaps as "trend data", which indicates the not surprising trend that water quality deteriorates as one travels down the river (eg. 0 mg/L Total P at Bundaro Creek, a tributary of the Mary River situated in the Conondale Ranges, through to 0.16 mg/L Total P at the Barrage at Maryborough.

I think the most important point is that, at least partly as a result of our efforts in raising community awareness, the Mary River Catchment has been made a pilot project for the Integrated Catchment Management of the Qld Department of Primary Industries. A Catchment Co-ordinating Committee has been formed as a result of several meetings held throughout the catchment. This Committee will have the responsibility of developing a strategic plan designed to ensure improvement in "catchment health". Also as a result of our efforts, through a combination of federal and state funding, a Waterwatch Co-ordinator has been appointed for the Mary River. I was lucky enough to secure this position. I will endeavour to continue the work that we have begun, consolidating and expanding the school and community network that we have initiated. In this work we will strive to raise people's awareness of the significance of the links between river catchments, rivers and the coastal marine ecosystems into which they flow.

P.S. As originators of the Waterwatch project in the Mary River, Barung Landcare and Maleny High School received runner-up in the Queensland Telecom Landcare Education Awards for 1993.

FORMATION OF "AUSTRALIAN WETLAND ALLIANCE"

In April 1994, a gathering of NGOs actively involved in wetland conservation resolved to form a collaborative network to be known as "Australian Wetland Alliance" (AWA). The mission of AWA is to link groups with an interest in wetlands and promote the protection and wise use of Wetlands in Australia.

Specific AWA objectives include: to improve awareness of wetlands, wetland values and the Ramsar Convention; to encourage and facilitate exchange of information; to encourage greater allocation of effort and resources for wetland conservation and management; and to promote the development and implementation of national and State wetland policies and action plans. Promotion and support of the 1996 Ramsar Conference in Brisbane will be the major focus for activity over the next two years.

Seven NGOs are members of AWA, e.g. Australian Littoral Society, Australasian Wader Studies Group and Oceania Wetlands Program (Asian Wetland Bureau). For details on membership and activities, contact:

Roger Jaensch, Interim Secretary, AWA
c/- CCNT Wildlife Research
PO Box 496 Palmerston NT 0831.
Ph: 089-221759, Fax: 089-221739.

NATIONAL WILD RIVERS STUDY

From: Michele Barson

The Australian Heritage Commission has been given responsibility for implementation of the commitments in the Prime Minister's December 1992 Statement on the Environment relating to the identification and protection of wild rivers in near-pristine condition. As the States have primary responsibility for river management and in some cases have already made assessments of the conservation values of rivers, the project will be done in close cooperation with these agencies. The main objectives of the project are to:

- identify, in cooperation with State and Territory governments and non-government bodies, Australia's near-pristine rivers
- increase public understanding and appreciation of the values of near-pristine rivers
- work towards the development of an agreed statement of management principles for near-pristine rivers.

A Wild Rivers Committee has been established to assist with the project's design and management. Several ASL members are on the Committee including Leon Barmuta and Patricia Geraghty. The Commission plans to organise occasional forums at State level and to produce a newsletter for the project.

MITCHELL RIVER DAM TO PROCEED!

The Bairnsdale Shire in East Gippsland, Victoria, have published new plans to build a dam on the Mitchell River. This had been halted in the 1970's after protests to alter the last remaining wild river in Victoria. The Land Conservation Council suggested that the proposal might still go ahead and it appears that pressure for irrigation water has influenced the decision of the Shire.

I will obtain more information to report in the next newsletter. I am also currently teaching "Aquatic Management" to students of applied Science - Resource Management so I would like to undertake some research into the area this spring.

If anyone, therefore, has some historical information on the Mitchell River I would be glad to hear from you.

Andrea Brunley
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East Gippsland Community College TAFE
PO Box 886
Bairnsdale, 3875.
Ph: (051) 52 0735

FASTS NEWS

The following letter is from:

Professor Graham Johnson, President FASTS
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The University of Sydney NSW 2006
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Fax (02) 692 3868
E-mail grahamj@extro.ucc.su.oz.au

Resignation of Dr David Widdup, FASTS Executive Director

David Widdup, Executive Director of FASTS since its inception, resigned his position on 21 June following a disagreement over the publication of the recent FASTS Newsletter This Newsletter was published without the knowledge or approval of the FASTS Executive or Board.

The FASTS Executive and Board acknowledge the great contribution that Dr Widdup has made to the Federation over the past 8 years and wish him well in his future endeavours.

FASTS intends to replace Dr Widdup in the Canberra office as soon as practicable, so that we can continue to lobby vigorously on behalf on Australian scientists and technologists. The Policy Document is an important new step in the lobbying process.

I would be pleased to receive any comments and suggestions as to how FASTS can better serve the Australian scientific and technological community.

Graham Johnston
President. FASTS
29 June 1994.

FASTS SCIENCE & TECHNOLOGY POLICY

FASTS represents the views of Australian scientific and technological workers to the Australian Government and other important bodies influential in developing Australian science and technology policy.

This is the first published draft of the FASTS Policy Document. It is being distributed to member societies and interested parties for comment. The Policy Document is based on discussions at the FASTS Policy Forum held in November 1993 in conjunction with the FASTS Council Meeting in Canberra. It has been prepared by members of the FASTS Board and now requires further input from the wider scientific community.

The Policy Document represents a move by FASTS towards a more proactive role in the development of science and technology policy in Australia, in addition to lobbying government on behalf of Australian scientists and technologists. This is the first stage in a continuous process of developing a science and technology policy for FASTS that evolves with the changing needs of the Australian community.

The Policy Document covers four broad areas. Section 1 deals with Education, Section 2 with Industry, Section 3 with Government Institutions and National Facilities, and Section 4 with University Research and Research-Training.

The FASTS Policy Document is to represent as far as possible the consensus views of members of the 43 scientific and technological societies that currently make up the Federation.

It is intended that the FASTS Policy Document will be a 'live document' subject to continual revision. The next major revision will be made early in October 1994 in preparation for the FASTS Council Meeting in November. Thus, I would appreciate comment from member societies, individual members and other interested parties by 1 October 1994.

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FASTS POLICY DOCUMENT

1. EDUCATION

1.0.1. Education is the foundation of an effective understanding, dissemination and application of scientific knowledge in modern technological society. An understanding of science is also a cultural goal for society, as it broadens the education of individuals in that society.

1.0.2 A general science, technology and mathematics (STM) education is important for society since it ensures that people have an understanding of scientific principles and methods and an awareness of scientific applications to everyday life. This in turn enables people to make informed judgements about the benefits of science to society, and helps eliminate prejudices/misconceptions caused by ignorance.

1.0.3 In Australia today we need a high level of scientific and technological literacy in the parliaments, public sector management and boardrooms of the country. Such literacy is essential if we are to take advantage of scientific and technological innovation, enhance our standard of living, and compete successfully with other advanced nations.

1.0.4 It is important that STM education should be of the highest standard at each level in the educational sector: primary, secondary and tertiary. To ensure such a standard, it is vitally important that priority is given to the understanding of scientific principles, facts and methods. This should be complemented, but not replaced, by discussion about science and its relevance to social issues.

1.0.5 Science education enables the training of a highly skilled workforce to meet the increasingly technical demands of employers in business and industry. Furthermore, advanced levels of such education produce the next generation of researchers, on whom the nation will depend for major advances in research, development and innovation. We therefore need to provide incentives for the most able students to develop their knowledge and abilities to the highest level, at the same time as providing knowledge for all.

1.0.6 In order to achieve the above goals, excellence in the teaching, practice and research of STM must receive the rewards and recognition that it deserves. The professional societies (both discipline and teacher based) involved in STM education are committed to achieving excellence in all these roles.

1.1 A NATIONAL STM CURRICULUM

1.1.1 An agreed national curriculum framework must be developed to maintain a high standard of STM education. By raising the standard of STM education, a national curriculum framework would assist in equality of employment, workforce mobility, and the elimination of barriers to higher education. Unnecessary inconsistencies between States need to be eliminated at the same time as a diversity in approach and non-core content are encouraged. The development of a national curriculum framework can be achieved only by close collaboration between those who are actively

involved in STM education at all levels, not merely by government-commissioned educators without reference to professional expertise in STM disciplines.

POSITION:

1.1.2 FASTS supports the concept of a national curriculum framework which would assist with the development of high quality STM curricula within each State and enable mobility of students.

STRATEGY:

1.1.3 FASTS should strongly oppose the National Science, Mathematics and Technology Statements and Profiles in their present forms, especially those that concern Years 11 and 12;

1.1.4 FASTS should call for the creation of a new curriculum framework in collaboration with specialists in STM disciplines, via their professional organisations;

1.1.5 FAST should encourage excellence and rigour at all levels as criteria for achievement in STM education.

1.2 TEACHER EDUCATION

1.2.1 It is essential that teacher training, both initial and in-service, be of a high standard in specific disciplines so that teachers assist effective learning of STM subjects to their students. Teachers need rewards, incentives and time to increase their knowledge and skills in science and technology, in order to increase their confidence in these areas and thus to encourage enthusiasm for STM in their students.

POSITION:

1.2.3 STM courses, particularly in secondary schools and especially in Years 11 and 12 should be taught only by teachers who have a high degree of proficiency in the particular discipline, typically a university major or higher degree in that discipline. There must be an adequate supply of teachers whose principal qualification is in STM.

STRATEGY:

1.2.4 FASTS should lobby strongly for the implementation of the Speedy Report recommendations for teacher training and qualifications in mathematics and science; support the introduction of continuing higher differential salary rates for **all** teachers who have appropriate higher level qualifications and expertise;

1.2.5 FASTS should support the provision of additional in-service and retraining schemes, in association with higher education and public sector research institutions, to increase the level of teacher expertise in STM disciplines.

1.3 EXPANDED SECONDARY AND UNDERGRADUATE STUDENT ENROLMENTS

1.3.1 There has been enormous growth in education in recent years through higher retention rates in Years 11 and 12, and through the massive expansion of the higher education sector. This growth has not always been accompanied by an appropriate increase in the allocation of resources, with the result that the quality of education has suffered.

POSITION:

1.3.2 Funding of secondary and tertiary education institutions should be sufficient to accommodate the recent growth in student enrolments at both levels. In particular, there should be a range of courses available to meet the different goals of students retained in Years 11 and 12. The quality of education should not be compromised, and should be improved beyond current standards.

STRATEGY:

1.3.3 FASTS should encourage the provision of improved infrastructure funding and facilities such as libraries, teaching laboratories etc., for example as recommended for higher education by the NBEET report on the Boston Consulting Group's findings;

1.3.4 FASTS should lobby for recognition of the true (higher) cost of higher education infrastructure in some STM disciplines by an increased allocation in the DEET formula EFTSU weighting as appropriate for each subject;

1.3.5 FASTS should support the application of (reduced) staff/student ratios appropriate to the needs of STM disciplines, particularly those involving an experimental component.

POSITION:

1.3.6 There should be an increased participation of women and other under-represented groups in STM education.

1.3.7 FASTS should lend public support to initiatives aimed at increasing public awareness of STM and increasing the participation of women and other under-represented groups in STM.

1.4 POSTGRADUATE ENROLMENTS

1.4.1 Australian higher education and public sector research institutions face a potential shortage of highly trained researchers and teachers towards the end of this century. This shortage is likely to become more acute as the private sector is being pressured to lift its performance in R & D. Consequently, the training of postgraduate students in STM should be monitored closely to ensure that this demand is met.

1.4.2 It should also be recognised that not all STM postgraduates find employment in research or within their own disciplines. Such students often choose to perform other roles, such as teaching or management, which are valuable to modern technological

society. Postgraduate education provides individuals with scientific problem solving skills and the ability to make informed decisions, and these skills are important in both private and public sector management which these days require a high level of technological literacy.

POSITION:

1.4.3 An adequate supply of research scientists and technologists is essential for national economic and cultural wellbeing.

STRATEGY:

1.4.4 FASTS should support the provision of at least as many postgraduate scholarships as are required for all First Class honours applicants at current levels;

1.4.5 FASTS should lobby for an increase in the postgraduate stipend for STM disciplines, in line with national priorities, in order to indicate the value of scientific and technological education at this level, and ensure that its value is maintained in real terms;

1.4.6 FASTS should support the provision of a relocation allowance for students wishing to move in order to undertake specific courses or postgraduate study unavailable at their home university.

1.5 COMPETENCE-BASED STANDARDS AND ACCREDITATION

1.5.1 Professional standards of training and expertise are recognised as being essential for some technology- and engineering-based disciplines. However, the multi-disciplinary and serendipitous nature of much scientific research means that overly prescriptive qualification standards in science are generally counterproductive.

1.5.2 Where there is a need for accreditation of degrees or qualifications, the most appropriate body to oversee this function is the relevant professional society for that discipline

POSITION:

1.5.3 Overly prescriptive standards for scientific research qualifications are not generally appropriate to scientific professions.

I.5.4 Professional societies should be involved in overseeing accreditation of degrees or qualifications.

STRATEGY:

1.5.6 FASTS should encourage its member societies to become more involved in the accreditation process.

2. INDUSTRY SECTOR

2.0.1 All sectors of the economy benefit from investment in research and development (R&D). In some areas, such as Australia's traditionally strong mining and agricultural sectors, private sector R&D contributes strongly to the value added to primary products, with consequent contribution to export income.

2.0.2 There are many small to medium size enterprises in areas of high technology that are leading the resurgence in exports and could potentially benefit from further investment in R&D. Some high value-added exports such as pharmaceutical's, by virtue of their low transportation costs, are particularly suited to Australia's comparative geographic isolation. Another important export market involving significant scientific input is 'green technology', where Australia has a real chance of becoming a world leader in sensitive environmental management.

2.0.3 However, it is undeniable that Australia's overall private sector R&D performance is abysmal by any international comparison. This fact must be recognised by industry and government. Measures must be implemented to ensure that a cultural change occurs in the Australian economy, whereby Australian industry is enabled to exploit the opportunities created by a strong private sector R&D effort and by stronger links with government and university research programmes.

2.1 A CULTURAL CHANGE IN INDUSTRY

2.1.1 Industry must learn that scientific research and development, like innovation in business and industry, proceeds largely by continuous incremental improvements with very occasional strategic leaps. Therefore commitment to long term programmes of research is required. Industry must acknowledge that expenditure on industrial R&D in Australia is well below world's best practice. No matter how well an innovative enterprise is managed, its ability to compete with the world's best is dependent on the quality of its R&D and the skills of its workforce.

2.1.2 There is a pressing need for a high level of scientific and technological literacy in the boardrooms, and senior management of the private and public sector in Australia. The ability to utilise innovative opportunities is largely based on an understanding of the underlying science and technology. Thus scientific and technological literacy is essential if we are to take advantage of innovation, enhance our standard of living, and compete successfully with other advanced nations.

2.1.3 A recent report commissioned by NBEET, 'Science and Technology Issues in Management Education', recommended that a "long-term aim should be for

science and technology issues to permeate much of the general management curriculum as part of the infusion of a more innovative ethos", and "to encourage the development and offering of MBA electives which focus on science and technology issues".

2.1.4 The NBEET report, 'Science and Technology Education: Foundation for the Future', noted that "of the twenty people who comprise the top level of management in three large Australian companies - BHP, CRA and CSR - thirteen have science degrees". Unfortunately, once people reach the top levels of management they are not perceived as business people rather than as trained scientists. This perception should be corrected.

POSITION:

2.1.5 Companies should be better informed about science and technology issues and should encourage/employ a higher representation of technologically literate people in their senior management.

STRATEGY:

2.1.6 FASTS should call for a 200% tax deductibility for the salaries of new company board members who possess higher degrees in science and engineering, during their first term as board members.

2.2 INCENTIVES FOR PRIVATE SECTOR R&D INVESTMENT

2.2.1 The success of incentives such as the current 150% tax deductibility for private sector R&D must be recognised. There are strong arguments for its continuation and enhancement to meet the changing taxation structure. At the same time, Australia must not increase government funding of industrial R&D at the expense of public sector R&D since it is essential to maintain R&D spending in both sectors at a level comparable with that of our competitors.

2.2.2 The government should clearly account for the money it now puts into encouraging private sector R&D via the Industrial Research and Development Board. The tax revenue foregone in the 150% R&D investment allowance and the R&D syndicate schemes alone is of the same order as that put into CSIRO, i.e. more than $400 million per annum. In addition, there is a myriad of other schemes funding industrial R&D directly. The tax foregone under the above measures must be carefully monitored and balanced by positive outcomes in the industrial sector, with increased revenue accruing to the government, as has been experienced with the Factor F scheme.

2.2.3 FASTS recognises that such schemes require the investment of scarce taxpayers' funds. However, there will be a much greater cost if we do nothing more to stimulate Australian industry to use science and technology more effectively!

Already there is a danger of encouraging industry to adopt a 'dole mentality' with respect to industrial R&D. To avoid this, the cultural attitude of industry towards R&D must change.

2.2.4 Australian industry must strive to become more competitive with other OECD countries. Most countries with which Australia strives to be compared are improving their industrial performance; Australia must improve at a faster rate in order to catch up. We must work 'twice as clever' as our competitors.

POSITION:

2.2.5 The level of industry investment in research and development should be at least equal to that of comparable OECD nations.

STRATEGY:

2.2.6 FASTS should support an increase in tax deductibility, to 200%, for R&D investment, in order to allow for structural changes in the taxation system and to maintain industry incentive for R&D investment.

POSITION:

2.2.7 Protection of our intellectual property is as vital as its discovery and development.

STRATEGY:

2.2.8 FASTS should lobby for patent costs to be included as an allowable R&D expenditure for tax purposes.

2.3 VENTURE CAPITAL FOR RESEARCH FUNDING

2.3.1 Increased involvement of the major financial institutions in funding private sector R&D is vital. Patient venture capital invested in private sector R&D is a valuable, but sadly lacking, commodity which is needed to aid Australia's increased international competitiveness.

2.3.2 We must encourage increased availability of venture capital funds for science and technology development. This could be achieved by attracting the financial sector with incentives such as a 200% tax deductibility for interest and dividends earned by investors in trusts and funds set up specifically for investment in R&D and high technology.

2.3.3 Government purchasing is another very important factor in this area. The highly successful Factor F scheme also represents an excellent investment of taxpayers'

money, and may result in Australia becoming one of the very few net exporters of pharmaceuticals.

2.3.4 The R&D syndicate scheme is a very important incentive because it brings scarce venture capital into high risk R&D in the private sector. This scheme has recently been reviewed favourably by the Bureau of Industrial Economics. A number of financial institutions are showing great interest in the R&D syndicate scheme, but unfortunately the scheme has received rather obstructionist signals from the Australian Taxation Office. The ATO must alter its policy in order to encourage industrial R&D.

POSITION:

2.3.5 There should be increased availability of funds for R&D, and a changed attitude towards high risk, high technology projects is needed in the venture capital market in this country.

STRATEGY:

2.3.6 FASTS should call for a 200% tax deductibility for interest and dividends earned by investors in trusts and funds set up specifically for investment into R&D and high technology projects; support a liberalisation of tax laws for the R&D syndicate scheme.

2.4 TECHNOLOGY TRANSFER LINKS BETWEEN PRIVATE AND PUBLIC SECTORS

2.4.1 The transfer of technology from fundamental and applied research in government and university laboratories to private industry is the vital link which needs careful consideration in any national economic strategy.

2.4.2 In the past, major Australian discoveries or inventions have repeatedly been allowed to wither, or have been hijacked offshore due to indifference from, or ineffective transfer to, Australian industry. This situation must cease.

2.4.3 Mechanisms such as the Cooperative Research Centres (CRCs) show promising results in encouraging links between the public and private sectors, and their impact should become increasingly evident over the next few years. Such links must be strengthened and made more effective if Australia is to reap the benefits of its high quality scientific research.

2.4.4 State, as well as Federal, governments have important roles to play in stimulating links with the private sector. The Queensland Government has benefited by providing infrastructure to attract research-based enterprises associated with large multinational companies. The Victorian Economic Development Corporation has also been successful in starting up and supporting

high technology companies. The support of the South Australian Government for the MultiFunction Polis, and state government funded technology parks are other important examples.

POSITION:

2.4.5 FASTS supports the nurturing of effective, long term links between university/government sector research and private enterprise, to enable technology transfer that will capitalise on our world standard research activities.

STRATEGY:

2.4.6 FASTS should support the continuation of the CRC programme; call for the necessary support to be provided for all top ranking applications to be funded by the ARC Collaborative Grants scheme; establish a Joint Enterprise Research Funds matching grants scheme for CSIRO and other government research organisations with industry collaborations; increase the time scale for collaborative industry research funding to mid-long term projects (10 years or more).

2.4.7 More scientists, technologists and engineers should be appointed to the boards of private companies. The tax relief (200%) proposed above for the first term of office is intended to encourage this. Provision should be made for the holding of joint positions in research organisations and on company boards, but conflict of interest provisions must be stated clearly. In some areas, such as geoscience, the transfer of scientists between public and private sectors is relatively common. Career paths that allow this type of interchange must be expanded if we are to achieve the cultural change in the perception of science which is required for maximum realisation of the benefits of science and technology.

POSITION:

2.4.8 There should be greater mobility of personnel between government, university and industry sectors, particularly in research and technological management.

STRATEGY:

2.4.9 FASTS should call for incentives or funding assistance for reciprocal arrangements which encourage mobility of skilled scientists and technologists between industry and relevant government or university institutions; lobby for the removal of impediments to the mobility of personnel, e.g. by improving the portability of superannuation funding.

2.5 SMALL TO MEDIUM ENTERPRISES

2.5.1 While mechanisms such as the CRCs help innovative firms to network and combine to focus their efforts, the competitive advantage of individual enterprises is often diluted. It is important to get an appropriate balance between the competitive drive of individual enterprises and the cooperative push of collaborative enterprises.

2.5.2 We should encourage industries that have a special common interest to set up research funding bodies, via voluntary sector levies, to consider specific research proposals from universities, government and private organisations. These research proposals should be for work in generic areas of interest to the industry, and not for direct applications which may have proprietary interest. This would be a particularly important innovation for small to medium sized enterprises, which on their own cannot perform R&D requiring a high level of investment.

POSITION:

2.5.3 Provision must be made for the R&D needs of small to medium sized enterprises to enable them to benefit from advances in research and high technology.

STRATEGY:

2.5.4 FASTS should support the establishment of voluntary industry sector research bodies funded by internal sector levies; support the extension of the R&D syndicate scheme, which at present is limited to enterprises performing at least $1 million worth of research, to allow the participation of more small and medium enterprises; call for subsidising of initial approaches to university and government research organisations, to encourage small businesses to seek R&D assistance.

3.0 GOVERNMENT INSTITUTIONS AND NATIONAL FACILITIES

3.0.1 Government has a role to play in the development of the modern, integrated technological economy and society. In order to perform this role adequately, government, in consultation with all other sectors of society, must possess a vision for Australia in the Asian region as we enter the 21st century.

3.0.2 This vision must reflect the realities of Australia's strengths and weaknesses, and must recognise the importance of the various sectors which contribute to Australia's scientific and technological development, i.e. government laboratories, industry and higher education. Within the context of this vision, national priorities should be set to take full advantage of the nation's assets and

to rectify its deficiencies. Before these priorities can be set, important questions must be asked:

What is the optimum population size for Australia?
What standard of living is desired by the Australian people?
What level of sustainable development is needed to maintain this living standard?
What scientific and technological input is required to meet the economic and environmental standards implied by the answers to these questions?

3.0.3 Australia is rich in natural resources and has a world standard industry sector utilising and managing these resources. We also have the potential to build an expanding manufacturing and services sector on this base. Furthermore, Australia enjoys a relatively efficient and responsive public sector that both initiates and practises those workplace and micro-economic reforms necessary to enable us to compete with both developed and developing economies.

3.0.4 Australia also has a world standard educational, training and research capability. The scientific and technological skills of its workforce are greatly respected in the Asian region. These skills offer a tangible resource to be utilised for the current and future economic development of the nation.

3.0.5 However, the size of Australia's economy, its population, its access to markets and its historical, political and economic ties require that progressive planning and adjustment occur in order to meet emerging challenges resulting from a changing global economy and political allegiances.

3.1 NATIONAL PRIORITY SETTING

3.1.1 Government has a particular role to play in the process of setting priorities. Because it dominates the funding of most research sectors, government is able to both mediate and implement national priorities. In particular, because much of the fundamental research performed is funded by government, the latter is responsible for ensuring that there is an appropriate balance in both the type and timescale of research activity in Australia.

3.1.2 The current science and technology debate tends to emphasise the economic benefits to Australia that arise from the contribution science and technology can make to Australian industry. It must also be emphasised that science and technology contribute to the quality of life, and this should be acknowledged more widely by government. In addition, science and technology should be recognised as an important and creative part of Australian culture.

3.1.3 Science and technology input is vital in many areas of national interest, such as land management, that are neglected by industry, but which can save large amounts of public money. Australia must recognise the need to monitor and

research the vast regions associated with its continental landmass, maritime zones and territorial waters (including the southern ocean). Australia has a further responsibility to research climatic and other influences (e.g. deforestation) affecting the southern hemisphere.

POSITION:

3.1.4 Australia must be careful in setting priorities for the investment of limited economic resources and in directing its human resources, in order to derive the greatest benefit from the country's scientific and technological skills.

STRATEGY:

3.1.5 FASTS should call for a bipartisan national summit to be held, to determine a national vision for Australia and national priorities for the country's development.

3.1.6 However, it would be unwise to encourage high quality research *only* in limited areas related to industry structure or national interest. The concept that science and technology should be harnessed for immediately perceived national goals neglects the much broader role that free ranging scientific research plays in uncovering new realms of technology for the benefit of society. Under such a prescriptive ethic as customer-driven research, there is little scope for encouraging a wide range of research programmes, not just in fundamental research, that could benefit the nation in the future.

3.1.7 Understandably, it is often difficult to predict promising fields of fundamental research which should receive priority in funding. Overly prescriptive planning is generally contrary to serendipitous discovery. It pays to have a range of state of the art research to allow Australia to tap into promising areas in the future. For example, if in the 1960s and 1970s we had investigated only areas in the 'national interest or industry', we would never have had our world class laser technology or optics industries in the 1990s.

POSITION:

3.1.8 Australia should maintain its present strong contribution to the world scientific knowledge base in areas of fundamental research.

STRATEGY:

3.1.9 FASTS should support the allocation of funding for fundamental research to the ARC, NH&MRC etc., at a level equal to that of comparable OECD nations.

3.2 STRENGTHENING AND COORDINATING RESEARCH EFFORTS

3.2.1 Once national priorities have been set, government supported research must be equipped with sufficient resources to enable operation at world's best practice.

POSITION:

3.2.2 The research capability of Australia's educational institutions, government research laboratories and industry collaborations must be maintained or developed to operate at world's best standards.

STRATEGY:

3.2.3 FASTS should support the funding of public sector research and infrastructure at the same level as that of comparable OECD nations.

3.2.4 CSIRO and other government agencies provide the most efficient means of solving a range of industry problems that could not be solved by small private research laboratories working under government contracts. Proposals to contract much government research to industry are fraught with danger. Guarantees of long term support for government funded research are essential. Too much emphasis on short term goals will be inimical to both industry and society.

POSITION:

3.2.5 Strong government based or supported scientific and industrial institutions must be responsive to national priorities, but must be given sufficient security to ensure that they adopt long term and innovative goals which meet the needs of industry and society.

STRATEGY:

3.2.6 FASTS should support triennium funding arrangements for both the CSIRO and higher education sectors.

3.2.7 In solving industry problems in a responsible and cost effective way, CSIRO and other government agencies will encourage interaction between public sector R&D and industry. Coordination of the government, industry and educational sectors must be strengthened if Australia is to compete with the strong national development that is being achieved by our Asian neighbours.

POSITION:

3.2.8 There is an important role for government in the coordination of the national research effort.

STRATEGY:

3.2.9 FASTS should support the recent inclusion of the science portfolio at cabinet level; support the continued operation of the Prime Minister's Science and Engineering Council; lobby for FASTS' representation on the Prime Minister's Science and Engineering Council (PMSEC) and the Australian Science, Technology and Engineering Council (ASTEC); support better integration of the capabilities afforded by government institutions with those of the university sector, state agencies and industry, to encourage cooperative and postgraduate research through programmes such as CRCs, Rural Industry Research Corporations etc.

3.3 LARGE NATIONAL RESEARCH FACILITIES

3.3.1 Because highly sophisticated laboratory facilities must be at the leading edge of advanced fields of science, the nation must determine its priorities for funding such facilities and for its long-term strategy for supporting their development. A balance must be struck between cost effectiveness of both small and large scale research. Networking of small laboratories is one effective way of utilising resources.

POSITION:

3.3.2 Where appropriate, large national facilities and research programmes of national significance must be supported as tools for collaborative research within and between disciplines.

STRATEGY:

3.3.3 FASTS should lobby for the establishment of a government funded major national facilities and projects committee, along the lines recommended by ASTEC, to finance large scale research which is outside the capacity of the present ARC system.

POSITION:

3.3.4 In some disciplines, repositories of information resources play as important a role as large national facilities do in other disciplines.

STRATEGY:

3.3.5 FASTS should lobby for the necessary funding required to maintain important collections, museums. libraries and reference resources of national and disciplinary significance.

3.4 SCIENCE AWARENESS PROGRAMMES

3.4.1 Australia needs a cultural change in the social perception of science, technology and engineering, and there is a need to promote a community debate on science and technology as essential factors in addressing ways to improve our wealth and quality of life. The Government's Science and Technology Awareness Programme is very important to this cultural change, and should be extended and publicised more extensively.

3.4.2 In particular, the Australia Prize must be reevaluated in terms of its effectiveness in promoting awareness of Australian science, both domestically and internationally.

POSITION:

3.4.3 FASTS believes that the Australia Prize could be utilised more effectively to increase the awareness of Australian science.

STRATEGY:

3.4.4 FASTS should call for the award of the Australia Prize to scientists who are Australian or who have performed the majority of their work in Australia; increase the number of prizes awarded annually by decreasing the size of each award to ensure that all major fields of science are represented at least every 3 years.

3.4.5 More effort should be put into training scientists to communicate their work to the public via the media. The few training programmes for this which are offered at some universities need to be put on secure funding, and if possible extended to most universities. However, it should be recognised that many scientists are gifted researchers first and foremost, without necessarily having the same aptitude at public communication.

3.4.6 It would, however, be useful to ask all applicants for research funding to state in lay terms how their proposed research could contribute to the social, environmental or economic benefit of Australia. This justification could include the contribution of fundamental research to the general culture of human knowledge, which may bestow benefits to society in the future when applied to other fields. Furthermore, if the proposed research is considered to be largely applied research, then the applicants should state how their work is based on fundamental research discoveries. This information should then be useful in demonstrating the importance of fundamental research in the Australian context.

POSITION:

3.4.7 Media awareness training and public presentation should be seen as a desirable part of the education of most scientists.

STRA TEGY:

3.4.8 FASTS should support the provision of publicly funded programmes and incentives to scientists to increase their interaction with the media and the public; support the inclusion of a statement in grant applications of the benefits of proposed research to society, with the proviso that the advancement of human knowledge can qualify as such a benefit.

4. UNIVERSITY RESEARCH AND RESEARCH-TRAINING

4.0 The Universities have a crucial bearing on Australia's mathematics, science and technology base since they train the qualified personnel for all sectors, including industry and commerce, government instrumentalities, health, and education. In addition, through their research and scholarship, Universities are the source of expert, timely, independent advice to industry and government, and to Australian society at large. Universities also have the vital role of fostering Technology Transfer, through dialogue with CSIRO and through partnerships with Australian commerce and industry. Finally, our Universities hold the major responsibility for maintaining Australia's standing as an intellectually and technically advanced nation - "The Clever Country". They admit Australia to an elite international club, poised to share, manage, and exploit cutting-edge technology as it emerges. The ability to sustain high quality in these four objectives (graduate and postgraduate training, national advice, technology transfer, internationally recognised research and scholarship) is under serious challenge in an era where the University sector has been forced to expand and diversify in a climate of financial constraint.

This policy document summarises FASTS recommendations for Research and Research Training (= post-graduate research) in the University Sector. It addresses the issues of research infrastructure, ARC/NH&MRC funding of projects, ARC/NH&MRC research fellowships, and University participation in both commercially sponsored and Government-commissioned research.

4.1 UNIVERSITY RESEARCH INFRASTRUCTURE

4.1.0 There has been widespread concern in Britain and in Australia about the gross inadequacy of Research Infrastructure Support in present funding models for scientific research in Universities, compared to norms among our successful competitors. A strong case for revamping the system was recently presented by the NBEET Boston Consulting Group Review, and for example, the recent NBEET/RACI Strategic Review recommends 120% loading for infrastructure on direct grant funding in chemistry projects

POSITION:

4.1.1 FASTS holds that for the nation to receive the full return for its investment in research, it is essential that infrastructure (equipment, libraries, well-found laboratories) must be in place and must be properly sustained. In addition, there should be rational distribution of specialist equipment, and a national strategy for major facilities. Ventures selected for the Major National Facility program should be those meeting national priorities and enjoying widespread support in the science and technology community.

STRATEGY FOR GENERAL UNIVERSITY RESEARCH INFRASTRUCTURE:

4.1.2 FASTS should press that guidelines for infrastructure overheads (by DEET, by other funding agencies, and by commercial partners) be designed to provide true-cost infrastructure support. The guidelines should reflect the differing needs of different disciplines and be reviewed regularly, in the light of experience.

STRATEGY FOR MAJOR RESEARCN FACILITIES:

4.1.3 FASTS publicly endorses a Strategy for National Major Facilities, as framed by ASTEC (1992). FASTS argues to Government that operation of some facilities can be partially self-funding through sales to industry and to S.E Asia.

4.2 ARC/NH&MRC PROJECT FUNDING.

POSITION:

4.2.1 FASTS holds that the ARC and NH&MRC should continue to be the principal source of funds for research devoted to the advancement of knowledge. Peer review of excellence should be maintained as the basis of research allocation. The ideal is to support excellent people with original ideas wherever they may be found, but also recognises that critical intellectual mass is sometimes important in allocating finite resources. There are opportunities for commercial funding to complement but not *replace* unfettered ARC- and NH&MRC-funded research [see 4.3.3].

STRATEGIES FOR ARC/NH&MRC PROJECT FUNDING:

4.2.2 FASTS should press Government to safeguard the direct funding of Research Projects by ARC/NH&MRC, by providing the necessary resources to fund all top ranked applications.

4.2.3 FASTS should encourage DEET to address the current mismatch between the new expectations in the expanded tertiary sector and the available ARC funding.

(That is, government long-term policy on the balance between teaching and research in the higher education sector should be more clearly defined.)

STRATEGIES FOR POOLING EXPERTISE AND RESOURSES:

4.2.4 FASTS should assist DEET/ARC to foster academic collaboration and pooling of complementary expertise/resources so as to aggregate scientific activity where appropriate in a particular field, thereby switching on isolated researchers and making best use of facilities.

4.2.5 FASTS endorses the 1991 decision of the A.N.U. Institute of Advanced Studies (and its various Schools/Centres) to commit 12% of its budget to research links with the other Australian universities.

4.3 COLLABORATIVE R&D AND TECHNOLOGY TRANSFER TO INDUSTRY

4.3.1 In total, the Australian commitment to R & D (expressed as a fraction of GDP) *is well below the OECD average,* lagging behind Italy, Scandinavia, and Belgium and half that in France, Japan, U.S.A. [RACI, 1993/DITEC 1992]. Moreover, government-funded R&D in the private sector amounts to only 3% of the national R&D effort, compared for example to Canada 12%, Germany 25%, U.K. 30% [RACI, 1993]. Evidently, our private sector has a weak R&D outlook, and is poorly positioned to take advantage of 'Technology Transfer' and collaborative research ventures.

4.3.2 FASTS endorses Government initiatives designed to foster new partnerships and induce substantial funding of University laboratories by the industrial sector, such as the Syndicated Research Schemes and Cooperative Research Centres. However, much of this new activity has to be industrially sponsored research of intrinsic mutual interest rather than merely industrially commissioned technical services. Otherwise, we *only aggravate the University sector's problems by* diverting scarce resources (both human and physical) and skewing scholarship and training.

POSITION:

4.3.3 FASTS holds that the total Australian commitment to R&D should be progressively raised to equal or exceed that of our major competitors among OECD Nations. (See Industry Section). Until the industrial culture shifts, the industrial R&D base expands and Government strategies must compensate for Australia's isolation and small home market.

STRATEGIES FOR COLLABORATIVE R&D AND TECHNOLOGY TRANSFER TO INDUSTRY:

4.3.4 Specific FASTS strategies for Commerce/University collaboration are listed in the accompanying section on Industry Policy (Section 2).

4.4 ARC/NH&MRC FUNDING OF (JUNIOR) RESEARCH FELLOWSHIPS

POSITION:

4.4.1 FASTS holds that ARC (& NH&MRC) are partners with the universities in providing employment and career paths for the best young researchers in the nation; Australia must not waste their talent or their expensive training. In particular, the transition to long-term employment is the one where women are still almost unrepresented in certain sectors.

STRATEGY:

4.4.2 FASTS strongly endorses the junior ARC Fellowship scheme, as a mechanism for nurturing and repatriating able young Australian scientists while they position themselves for appropriate long-term employment, and argues it should be increased in scope.

STRATEGY:

4.4.3 FASTS recommends that the ARC post-doctoral fellowship scheme should be coupled to Government initiatives (such as talent-spotting for the public service, industry or a revitalised secondary education sector) to ensure that these scientifically skilled Australians have productive opportunities for long-term employment.

4.5 SENIOR ARC RESEARCH FELLOWSHIPS

4.5.1 FASTS notes that the Senior ARC Fellowship scheme (taking established vigorous researchers out of university teaching and administration) is excellent for the recipients, but is proving to be costly/disruptive for their colleagues, in a time of straightened resources.

STRATEGY:

4.5.2 FASTS recommends that the operation of the Senior ARC Fellowship Scheme should be reviewed.

CALLS FOR HELP

DESMID COLLECTION

From: Michael Dingley (Consultant)
28 Valley Road, Hazelbrook, NSW 2779
(047) 58 7128

I am studying the distribution of DESMIDS in Australia and am therefore collecting freshwater samples from as many parts of Australia as I can. I receive no scientific funding and have to fund this large project myself. To actively collect in other states requires a large amount of money and time, both of which I have limited supplies of. My request is that ASL members may be able to collect samples for me, when sampling for their own requirements and I would offer postage costs to my home address.

Collectors should include data such as; date of collection, locality (lats and longs would be greatly appreciated), altitude (if known), how the samples were collected (sweep, algae squeeze etc.), pH and collector's name. Samples can be collected by towing a plankton net behind a boat, a plankton net sweep through vegetation at the margins of ponds, lakes, billabongs, pools etc, squeezing filamentous algae and collecting the run-off or scrapings from wet rocks. 50-100 mL samples from each site are best preserved in 4% formalin and kept in a screw topped jar. For further information contact the above address.

LOOKING FOR WORK

- BSc graduate, University of Adelaide, Zoology and Botany;
- looking for employment in freshwater ecology;
- field experience with Stuart Blanch (supervised by Assoc. Prof. Keith Walker), carrying out work on the effect of flood regulation on aquatic macrophytes;
- skilled in word processing and report preparation (Microsoft Word for Windows 2), spreadsheets, and statistical analysis (Excel 4; Systat);
- current class 1 drivers licence for South Australia and current boat licence;
- experience in use of G.P.S. (Global Positioning System);
- excellent communication skills (written and verbal);
- work well in unsupervised and supervised environments;
- willing to move interstate for longer term employment;
- prefer paid employment, but I am willing to carry out some volunteer work also;

If you think I can help you with your research , or believe I would be suitable for a research project, please don't hesitate to call or write to me:
Scott Nichols - P.O. Box 510, Bridgewater, South Australia, 5155., (08) 339 3400

THE GOD OF ECOLOGY (A NOTE FROM IVOR....)

I have never believed in gods, until recently that is. I haven't suddenly become 'new born', it happened as a result of years of collecting data for ecological studies. Have you ever noticed that the one year that you go to collect data has abnormally high rainfall or that unexpected spate that takes out your artificial channels just before you collect the clinching sample? Sometimes the problem goes beyond simple data collection and gets into the analysis side of things. For instance, you finally thought you had sussed the proper way to analyse your data and then some bugger decides to criticise it and you have to start again from scratch.

People have claimed such things happen because of Murphy's Law; 'If something can go wrong it will' . I have even heard people invoke the old Heisenberg's Uncertainty Principle; 'The mere act of observing a phenomenon changes the actions of the objects being observed'. But I claim these are mere pagan beliefs and that there is a god of ecology and it is this entity who is responsible for all mishaps in ecological experiments and no, I AM NOT BEING PARANOID! (the Ph. D. and the public service might have affected me but it wasn't that bad). Unlike the Christian god this one does not want to be known and thwarts all attempts to discover its true nature.

The question is, now that we know this being exists what do we do about it? Firstly, I propose that a register of all 'Acts of God' be compiled in an attempt to see the extent of the problem. Secondly, all future funding proposals should include the cost of insuring projects against said 'Acts of God'. But I think in the long run we will have to start trying appease this being and I am open to proposals. I wish to propose one myself to initiate discussions on the matter. I think that at future ASL congresses the Jolly Award candidate should be sacrificed (cut out the pulsating heart). I think after he or she has given their lecture would be the most appropriate time. We could probably start with all still-living Jolly Award winners just to start on good terms with the god of ecology. I suggest that this is particularly fitting because the Jolly award is presented to those of us who are long in the tooth and have been longest delving into the area the god wants us out of. This would also have the advantage of freeing up a bit of space up the top of the ladder for those career-minded souls.

Please address all correspondence to:
c/o Ivor Growns
AWT stream studies
51 Hermitage Rd
West Ryde 2114

BIBLIOGRAPHY

Please send details of publications, reports, etc., to Russ Shiel MDFRC, PO Box 921, Albury, NSW 2640.

It appears that no-one has published anything recently, as Russ has received no entries !!!!!!

INVERTEBRATE BIODIVERSITY AND CONSERVATION

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